Strategies for a Smoke-free World

Selected Resource Documents From The
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The opinions expressed in these papers do not necessarily reflect the policy of the organizations involved in conducting the Workshop.

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Introduction

In 1980, the Board of Directors of the International Council on Alcohol and Addictions concluded that tobacco should be included within the Council's mandate. However, the Council was able to devote few resources to the tobacco problem prior to the 34th International Congress on Alcoholism and Drug Dependence,[1] held in Calgary, Canada, in August 1985. The 34th Congress provided the opportunity to initiate a more active program.

A four-day International Workshop on Smoking and Health was convened immediately prior to the 34th Congress. It was organized at the request of the International Council on Alcohol and Addictions by the Health Promotion Directorate of Health and Welfare Canada and the Alberta Alcohol and Drug Abuse Commission, in co-operation with the World Health Organization Program on Smoking and Health. Recognized experts from around the world were invited to participate in the Workshop (see Appendix A).

For more than two decades the tobacco control problem has been the subject of active discourse and analysis at the international and national levels. Organizations such as the World Health Organization, l'Union Internationale Contre le Cancer, and the International Union Against Tuberculosis, have made major contributions to these efforts. Conscious of this, the Workshop approached its task in a way that would build on past strengths and make an additional contribution to world-wide efforts to reduce tobacco use.

This volume contains selected resource papers that were prepared specifically for the Workshop. In addition, a report of the Workshop, and the detailed recommendations from the Workshop to the Board of Directors of the International Council on Alcohol and Addictions are separately available (see Appendix B).

[1] The International Council on Alcohol and Addictions is an international non-governmental organization with consultative status (Category II) with the United Nations Economic and Social Council, and is in official relations with the World Health Organization. Among its functions is the sponsorship of the International Congresses on Alcoholism and Drug Dependence. The 34th Congress was held in Calgary, Canada in August, 1985. This Congress marked the 100th anniversary of these events.

Ethical and Political Issues in Smoking Control[1]

Michael M. Daube[2]

In 1884 Bonsack invented a machine capable of mass-producing cigarettes. Thereafter, cigarette smoking, which had hitherto been a pursuit reserved for the affluent, became available to the masses. For more than half a century, cigarettes became increasingly popular, first among males, then also among females. By the 1940s, those working in the tobacco industry could rest content in the knowledge that theirs was a product widely regarded as beneficial; cigarette sales were increasing, and likely to continue doing so in all sectors of the community, and in all parts of the world.

The evidence indicting smoking, and cigarettes in particular, as a major cause of avoidable death and disease began to emerge in the late 1940s. By the early 1950s it was clear to any sensible observer not only that the evidence was solid, but that it would become more so, and that the diseases caused by cigarette smoking would in all probability turn out to be far broader in range than those initially identified.

More than 30 years later, it is easy to be wise after the event. How would any of us have reacted, confronted with the choices and problems facing the tobacco industry?

The fact remains that almost all of the ethical and political problems relating to smoking and health arise out of the tobacco industry's reaction to the early evidence, and their actions since.

Consider two possible scenarios:

Scenario 1

The major tobacco manufacturers are made aware that their product seems to be a major cause of death and disease. The number of deaths is as yet uncertain, but seems likely to run into, at least, tens of thousands. Their initial reaction is understandably one of horror, but they decide that there can be no justification for so much loss of life. They are not so unworldly as to cease manufacture of their product—which remains in demand—but they resolve to take all action possible to ensure a gradual reduction in its use, and hence in the damage it causes. This entails actions such as:

- A move towards speedy diversification.
- A decision to cease entering new markets.
- The immediate cessation of all forms of promotional activity for the product.
- Initiation of programs for retraining of workers in the industry.
- Discussions with governments as to how, faced with a problem of this magnitude, cigarette sales can be reduced and ultimately ended with minimum possible long-term damage to the interests of those involved in their manufacture and sale.

Scenario 2

Major tobacco manufacturers are made aware that their product is likely to be a major cause of death and disease. They react with a mixture of shock and disbelief. Even after the initial period of concern, they determine that for the foreseeable future they will refuse to believe the evidence. However strong it becomes, they will deny it. This leads over time to the following:

- Public denial of the evidence.
- Maximum efforts to cast doubts on the evidence, and on the scientific and medical credentials of those responsible.
- Attempts to fund counter-research, in the hope that new evidence will materialize to vindicate the cigarette.
- Maintain and expand efforts to increase sales and find new markets, particularly amongst those groups (such as the young) and communities (such as developing countries) least likely to be aware of the health consequences of smoking.
- Increased efforts to promote the product.
- Maximum obstruction to any efforts to reduce cigarette smoking.
- Increased co-ordination amongst the major tobacco companies in efforts to counter an increasingly vocal "health lobby".
- Maximum pressure on governments, media and others to prevent any developments counter to the interests of the tobacco industry.
- Some diversification, but designed to strengthen the industry's hand in terms of increasing its range of potential supporters.
- Development of a range of new arguments (for example, "freedom of choice") to justify continued sale and promotion of cigarettes.

Self-evidently, the tobacco industry chose the latter course—initially, perhaps, almost by accident, but latterly as a matter of carefully considered policy. Any smoking control program in 1985 must recognize that almost all the major obstacles are created by the international tobacco industry. It is also worth noting that there has been a dramatic change in the type of individual at the head of the tobacco industry. During the 1950s, 1960s, and even the early 1970s, many of those involved in running the major tobacco companies had entered the industry when the product was still seen not only as harmless, but as beneficial. Their successors have entered the tobacco industry knowing exactly what cigarettes do. They are more ruthless, more cynical, and simply tougher than their predecessors.

Whether or not the new industry leaders have come to believe their own rhetoric is almost immaterial. They have started to work, and continue to work, for an industry in the sure and certain knowledge that the medical establishment considers their products to be the largest avoidable cause of death and disease. Indeed, their interest seems only to be to promote

further sales of this product, regardless of the consequences. The new breed of tobacco baron is in one sense more difficult to counter. They are rougher, tougher, more experienced, and more sophisticated and impervious to genuine concerns as to human health. On the other hand, the knowledge that they are as described makes them easier to counter. Their record speaks for itself as a continued denial of the evidence that makes them literally incredible on policy as well as scientific issues. There should be far less cause for concern at the ultimate implications of a decline in cigarette sales, for the industry has long lived with the knowledge of the consequences of its product, and has had ample time to prepare for its lot in the 1980s.

But the reality is nonetheless that even the difficulties of influencing human behavior pale almost into insignificance when compared with the problems of overcoming the tobacco industry. Ironically, there is now a vast range of evidence to demonstrate that in the absence of a strong tobacco industry and its promotional activities, cigarette smoking would gradually decline in some countries, and never even become a serious problem in others. The problems considered in this paper, therefore, relate primarily to the tobacco industry. Without this industry there would be little need to consider any ethical issues related to tobacco—and certainly no political issues.

Viewed in the abstract, there should be few ethical problems in smoking control. If the question is asked, "should not only governments but all organizations and individuals do all within their power to reduce the largest avoidable cause of death and disease in the community?", the answer must be positive. Problems only arise when for "the largest avoidable cause of death and disease in the community" one substitutes the words, "cigarette smoking". The problems, it can speedily be seen, relate not to theory but to practice; the problem is political. Such "ethical" questions as have arisen in recent years generally develop not as matters of genuine concern about ethics, but as attempts by the tobacco industry and its supporters to divert attention from the major issues.

Smoking is a health problem, an educational problem, an economic problem, and a psychological problem. Above all, however, it is a political problem, and has been since the evidence appeared and the tobacco industry decided on a policy of maximum resistance.

The political issues surrounding smoking can perhaps be divided into three areas:

1. *Why act?* Is there sufficient evidence to justify action? Is the evidence strong enough? Is there sufficient awareness amongst public opinion-leaders to demand some form of action? These would have been legitimate questions some 35 years ago, but have long been resolved to the satisfaction of all except the tobacco industry and its adherents. Why act? Simply, because smoking is so substantial a health problem.

2. *What action?* For some 25 years after the appearance of solid evidence on smoking and health around 1950, there was a debate amongst those genuinely concerned with smoking reduction. The debate was complicated partly by the inexperience of those working in this area, and substantially by the efforts of those opposed to effective action to confuse and divert the debate. Eventually, however, around the mid 1970s a consensus emerged, a consensus represented in the various recommendations of the World Health Organization expert committees.

   Despite the attempts of the tobacco industry to blur the issues, it is now very clear that we know what needs to be done.

3. *Why not?* No country in the world has fully implemented the entire range of the World Health Organization recommendations. Some have come close (with the Scandinavian countries leading the pace) and others (particularly the English-speaking developed countries) there has been a continuous war, with the tobacco industry losing occasional skirmishes, but still surviving, albeit with declining markets and prospects; in most countries, however, the recommended program is nowhere near implementation. The answer to the question, "why not?" can be answered very simply in terms of the sheer political power of the tobacco industry. It is a more detailed analysis that brings into question some of the important ethical and political issues.

The political and ethical issues can perhaps best be understood by considering the various different key groups, and examining their positions and problems. This does not purport to be an exhaustive list (and there will inevitably be some overlap between groups) but it is an effort to form the basis of a categorization.

1. The Tobacco Industry

Aims

To maintain the highest possible level of cigarette sales; to increase the size of the market; to slow down the decline in the market; to ensure maximum sales in a declining market.

Ethical Concerns

Genuine: Ethical issues arising out of normal business practice.

Artificial: "Ethical" issues raised to divert attention from the case for action. Examples are:

- "Freedom": Should any manufacturer not have the freedom to sell his product as he sees fit?
- If a product may be legally sold, why should there be any restrictions on its promotion?

- Should a manufacturer be forced to place on his packaging and advertising information that will damage his sales prospects?
- Is it proper for a state that benefits from the sale of tobacco also to condemn the sale and use of tobacco?
- Is it proper for governments, medical organizations, or individuals to interfere with the lives and freedoms of individual citizens by attempting to change their behavior?
- If those campaigning to reduce cigarette smoking are successful, will they next turn their attention to, for example, alcohol, confectionary, or butter? Is the smoking and health campaign but one step on the road to totalitarianism?
- If it is accepted that any action in this area is required, should it not be only on the basis of full discussions with the industry, and not as a result of arbitrary government decisions?
- Should the tobacco and advertising industries not be regarded as responsible segments of the community, capable of policing themselves?
- Is it proper to intrude (through mass media, for example) into the lives of ordinary citizens with fearsome and offensive material on death and disease? Should members of the public not be spared unpleasant sights, such as dying patients?
- Are governments and others not irresponsible in devoting so much attention to smoking, when there are so many other serious problems in our societies?
- Is it ethical to act on the basis of evidence that is not totally accepted by every single doctor and scientist in every country?
- Is it not counter-productive to curb the activities of the tobacco industry, when these activities provide so many benefits to the community through employment, advertising, sport sponsorship, and so on?
- Are the rights of the smoker not equal to those of the non-smoker?

These issues (and others not dissimilar) are frequently raised by the tobacco industry and its supporters. They can all be readily answered. However, just as a single misleading page of comment on the scientific evidence on smoking and disease will often require expenditure of much time and effort if it is to be fully rebutted, so these so-called ethical questions can initially sound convincing to an uninformed audience. Some have been fully dealt with in reports of the World Health Organization, l'Union Internationale Contre le Cancer, and others. There still, however, remains scope for a substantial report setting out the arguments adduced by the tobacco industry and its adherents, and presenting a very full rebuttal for each. Such a report, if produced by the World Health

Organization, would present a useful complement to Dr. Ruth Roemer's outstanding volume, *Legislative Action to Combat the World Smoking Epidemic.*[3]

The tobacco industry itself is clearly composed of many disparate groups. These include boards of directors, shareholders, employees (including those who are politically active such as public relations staff), scientists working for the tobacco industry and used as part of their public relations effort, and tobacco growers. All share a concern to promote the aims set out above.

2. Tobacco Industry—Indirect

Aims

To assist the tobacco industry with its activities insofar as possible.

Ethical Questions

As above.

A very substantial range of organizations and individuals are linked with the tobacco industry. While not seen as part of the industry itself, they support the industry's aims and activities, often with considerable fervor, and represent the industry's best hope of political support. They include: retailers (major chains for whom tobacco may be a relatively minor part of their sales, but who wield much influence, and small organizations or individual retailers for whom tobacco is apparently crucial to their livelihoods), companies owned or part-owned by the tobacco industry, companies closely linked with the tobacco industry (machinery, packaging, etc.), industries gaining substantially from the tobacco industry (advertising, public relations, other marketing, newspapers and other recipients of advertising, etc.), tobacco workers' trade unions, business organizations (particularly those concerned with opposing any apparent encroachment by the State), political organizations (again, particularly those concerned with resisting any apparent encroachment by the State's influence), recipients of promotional largesse (for example, sporting and artistic bodies), and consultants (a term used here to cover those individuals who receive direct or indirect financial support from the tobacco industry).

All the above should be seen as being firmly opposed to smoking control. Their political power forms the answer to the question, "why not?".

3. The Soft Center

"The hottest fires in hell are reserved for those who, in times of great moral crisis, maintain their neutrality."

—Dante

Aims

Survival. To achieve objectives in their view unrelated to the issue of smoking and health. To avoid involvement in unnecessary controversy. To find the course of action likely to be most popular and convenient.

Ethical Questions

As above. For those required to consider or take a position on the smoking and health issue, the ethical questions raised by the tobacco industry must be answered, and can provide a useful excuse for inaction while they are being considered.

Priorities (Political and Otherwise)

What price action on smoking, when it may prevent progress in other areas more important to the individual?

The group referred to as the "soft center" consists of those who could either individually or corporately be responsible for taking decisive action on smoking, but have no direct cause to favor one side or the other. They include politicians (governments and the rank and file politicians), the media (decision makers, owners, editors, and employees—journalists, producers, etc.), independent control authorities (for example, those who establish advertising industry codes), public servants (health ministries and other relevant governmental agencies such as treasuries, departments of industry, sport, agriculture, and employment), consumer organizations, teachers, and so on.

For the committed campaigner on smoking and health many of the above would not fall into the "soft center" category. Health ministers, for example, should feel it their duty to take all possible action to reduce smoking, and independent control authorities and consumer organizations should take much the same view. The reality, however, is that with very few exceptions these individuals and organizations start out informed not by a sense of mission to reduce avoidable health problems, but by the aims set out above.

4. The "Health Lobby"

Aims

To reduce and mitigate so far as is practicable the health consequences of smoking.

Ethical Issues

In one sense, the "health lobby" should theoretically be informed by only one ethical issue. It should be as unethical for health professionals to

avoid doing everything in their power to reduce the health consequences of smoking as it would be for an individual doctor to avoid providing maximum assistance to a sick patient. This is, of course, an over-simplistic view. Simply by the nature of the complexity of the smoking and health problem, a number of ethical issues have arisen. These include:

- To what extent should the health professional become a political campaigner?
- When is compromise appropriate? Compromise might range from accepting less than one would wish in terms of political progress to devoting less of one's own time than one would wish to this area.
- How far is it appropriate for a doctor or other health professional not to take every possible opportunity to advise patients to give up smoking?
- How far is it proper for health professionals to go in speaking out on issues requiring additional expertise (for example, advertising or economic issues)?
- Is it proper for health professionals to accept any funding for any form of research or other activity from an industry responsible for so much avoidable death and disease?
- How far is it proper for health professionals to go in working for organizations (ranging from medical associations to the World Health Organization) which have not taken all the action they might to reduce smoking and its health consequences?
- Should one associate with organizations in receipt of tobacco industry funding, but not directly of the tobacco industry (for example, diversified parts of the industry, sporting bodies, or the media)?
- Should one debate publicly with representatives of the tobacco industry?
- What if any action should be taken in respect of those health and related professionals who, as a possible consequence of receiving tobacco industry support, take a public approach other than that they might otherwise have taken?

The "health lobby" category consists of three main groups: those who campaign actively on smoking, those who support such activity, and those who play no part whatever in smoking control activities. The above and related questions clearly apply more to some categories than others. Equally, those involved in the "health lobby" must be aware of the artificial "ethical" issues raised by the tobacco industry, although they should be well enough informed to recognize that these are indeed artificial.

Although the opprobrium of smoking and health campaigners tends rightly to be reserved for those who actively promote cigarette sales, it may well be that the most important ethical and political questions relate to the inactive potential members of the "health lobby ". They are the ones whose active involvement could serve to change the face of the smoking and health campaign at the political level, and also to change the habits of individual smokers.

The above is an initial effort to set out some of the groups involved or potentially involved in smoking control activity, and to consider the ethical and social issues they address. There are, of course, a variety of further questions: how important is "health" itself politically? The Cabinet Minister responsible for health is normally not a senior member of any government. What is the relative priority to be attached to prevention, as opposed to high technology medicine? Is there a future for "unpopular" as well as "popular" prevention? Do those involved in smoking control activities sometimes themselves mislead the public (for example, through over-promotion of smoking cessation programs for the individual)?

Above all, however, the reality is that smoking is and remains a political issue. There are many sub-issues which are actively debated: the role of advertising, taxation, health warnings, rights of the non-smoker, low-tar, education, and employment. But all these are only parts of the key political question which is whether the desire of a community to protect its health can take precedence over that of a major industry to protect its commercial interests.

The ethical and political issues are inextricably interwoven. At their simplest, however, there are only three types of ethical questions:

1. Is it proper to continue with active sale and promotion of a product responsible annually for well over two million avoidable deaths world-wide?
2. Is it proper not to take every possible step to prevent and reduce this toll of death and related disease?
3. The artificial ethics of tobacco: how many ethical questions can be raised and debated in an effort to delay action?

Those involved in the "health lobby" are often fairly well-informed about the health consequences of smoking (although, regrettably, often not as fully as one might wish). It is, however, often distressingly apparent that they are both ill-informed as to the political issues, and unable to deal with the practical diversions set up by the tobacco interests.

That smoking is a political issue is not in doubt. Essentially, the battle is simply one between the major tobacco companies and those health campaigners (whether inside government or outside) who wish to see measures introduced that have some genuine chance of reducing smoking.

In recent years there has been increasing polarization. Factors leading to this include almost universal acceptance of the dangers of cigarette smoking, continued encroachments on the freedom of the tobacco industry to do as it wishes around the world (example in one country always being useful in another), recognition by the medical profession of its own strength in this area, development of campaigning organizations, development of new areas of attack (for example, "rights of the non-smoker" and consumer organizations), and difficulties faced by the tobacco industry in presenting itself as other than an isolated group.

For the tobacco industry, the main issues relate to "freedom", but a spurious definition of freedom that entails the unrestricted freedom of a manufacturer to promote and sell a product, however harmful. Sub-issues include: employment, taxation, advertising, support for sporting and other organizations, "freedom" for smokers, economic benefits to the community, as well, of course, as disputes over the evidence.

For those concerned with reducing smoking, the specific political issues over which battles and skirmishes are fought include:

1. Need for a comprehensive, long-term smoking control program. All the other issues are subordinate to this. Once a government has accepted its need, the problem is one of implementation, rather than principle.
2. Tobacco advertising:
   - An advertising and promotional ban is the only effective solution.
   - Interim restrictions.
3. Taxation policy:
   - General taxation.
   - "High tar" tax.
4. Prohibition of sales to minors.
5. Health warnings on packaging and such advertising as remains.
6. Control of tar, nicotine, carbon monoxide, etc.
7. Restrictions on smoking in public places.
8. Effective health education. The point to be stressed here is that low-key health education in isolation is unlikely to be effective. The requirement is for properly planned and funded health education, in conjunction with a legislative program.
9. Subsidies (for tobacco growing, production, etc.).
10. Governmental support for indigenous tobacco industries and/or exporters.

There are many other political debates and sub-issues, but these would appear to be the major issues on which strictly political battles are fought, or are likely to be fought.

It would be difficult to over-estimate the political influence of the tobacco industry. It stretches from the White House to the research laboratory and encompasses media, politicians, professionals of many kinds who should in theory not be supportive of the tobacco interests, and a wide and often surprising list of individuals and organizations. It is, however, important to note that even with this level of support, the tobacco industry has gradually been losing battles around the world. It is an industry that fights ruthlessly, and that uses every political weapon available: but it is an industry in decline. It is also an industry justifiably concerned with the "domino theory". As one country, or section of a country, imposes further constraints or develops new programs, so others are likely to follow.

The World Health Organization has already produced reports on the effects of smoking on health[4] and suggested suitable policies for smoking control.[5] Others have documented at some length the political nature of the smoking problem—a role that is in any case probably not appropriate for the World Health Organization. It would, however, be appropriate for the World Health Organization to produce a report setting out authoritative counters to the arguments of the tobacco industry, and also to the arguments of those who refrain from participating as fully as they might in action to control the smoking epidemic. This is where ethical and political issues meet.

Footnotes

[1] For the purposes of this paper, "smoking control" is taken to mean the efforts of governments and health agencies to reduce cigarette smoking. The objective of a smoking control program is taken to mean implementation of the policies and broad approach first set out in the Norwegian report, *Influencing Smoking Behavior* (Geneva: l'Union Internationale Contre le Cancer, 1967) and since recommended by the World Health Organization, l'Union Internationale Contre le Cancer, and a host of national and international medical and consumer organizations. That is, a comprehensive long-term program comprising educational, legal (including fiscal) and cessation activities.

It is also assumed that such a program would be implemented in a manner likely to be acceptable in democratic societies. Measures entailed include a ban on tobacco promotion, which infringes no liberty save that of the manufacturer to promote a known carcinogen, firm and accurate health warnings on tobacco packaging, curbs on sales to minors, substantial (and suitably funded) education program, taxation policy, and restrictions on smoking in certain public places. They do not include draconian measures such as prohibition of tobacco sales, or restriction on the right of individuals to behave as they wish in their own homes, and in their own company.

[2] Health Promotion and Education, Health Department of Western Australia, 60 Beaufort St., Perth, Australia 6000.

[3] R. Roemer, *Legislative Action to Combat the World Smoking Epidemic* (Geneva: World Health Organization, 1982).

[4] World Health Organization, *Smoking and Its Effects on Health. Report of a WHO Expert Committee*, Technical Report Series No. 568 (Geneva: 1975).

[5] World Health Organization, *Controlling the Smoking Epidemic. Report of a WHO Expert Committee*, Technical Report Series No. 636 (Geneva: 1979).

Economic Considerations Relevant to the Formulation of Public Policy on Tobacco Growing, Manufacturing and Pricing

W.F. Forbes and M.E. Thompson[1]

This paper will focus on the economic considerations which are relevant when a public policy is formulated with respect to tobacco growing, the manufacturing of tobacco products, and the pricing of tobacco products. It will discuss the potential contribution of these tobacco-related activities to agricultural development, to the ability to generate employment opportunities, to increasing exports, and to increasing tax revenues. As part of the discussion, the trade-offs between these objectives and public health aims which include the health consequences of smoking will be considered. The aim is to provide a realistic perspective on the importance of these factors in policy formulation, particularly as they relate to developing countries, because over half the total world crop production comes from the developing countries (see Table 1) and because it is there that expansion of tobacco growing is expected to occur.[2]

The health consequences of smoking are well known and have been summarized in a series of authoritative reports, such as those of the U.S. Surgeon General and of the UK Royal College of Physicians.[3] Although the effects of smoking on morbidity and health care utilization are only partially known in quantitative form, it is generally agreed that smoking leads to serious and adverse health effects. On the other hand, there is less agreement on the overall economic consequences arising from the increased mortality and morbidity of smokers, and widely different estimates have been reported. For example, for the U.S., estimates range from losses of more than 10 billion dollars to gains of more than 10 billion dollars if smoking were eliminated. These disagreements arise mainly because existing studies have focused on different aspects of the issue.[4] In fact, if one attempts to evaluate the costs of smoking to society, many aspects must be considered: the consequences of premature death, reduced productivity or the loss of productive time on the job, health-care costs (the use of resources to provide medical and social services for the treatment of smoking-related diseases), and the welfare and disability payments paid to smokers and their dependents from government programs.

Consideration of these issues shows that the various health and economic consequences are interrelated. This paper will investigate the quantifiable economic consequences of smoking as they might be perceived from the point of view of a developing country, bearing in mind that there are non-quantifiable consequences which are also relevant, such as the pain and suffering caused by smoking-related diseases. The approach taken in this paper will be to outline a hypothetical situation in which arguments will be presented to persuade a developing country to establish a tobacco industry. In an extreme form of such an argument, a case will be made for a country to devote a substantial amount of its resources to the growing of tobacco. Following this, some considerations will be outlined which should facilitate the making of an appropriate judgment on this issue.

	Production			
	1976-78 average	1979	1980	1981 (est.)
	(thousand tons, farm weight)			
World Total	6009	5713	5563	5814
Developing Countries	3727	3672	3495	3612
Africa	220	262	254	210
Malawi	47	64	56	52
Zimbabwe	94	114	109	69
Latin America	677	774	662	637
Mexico	65	76	79	70
Argentina	79	69	62	53
Brazil	305	401	350	315
Near East	335	260	306	257
Turkey	298	214	250	200
Far East	1012	1088	1048	1031
India	421	454	447	450
Indonesia	85	141	137	125
Korea (Rep.)	130	112	93	87
Pakistan	69	70	71	61
Philippines	84	85	75	81
Thailand	76	83	87	87
Asian CPE	1483	1288	1225	1477
China	1428	1227	1168	1423
Developed Countries	2282	2041	2068	2202
North America	1020	772	918	1029
Canada	100	80	108	110
United States	020	692	810	919
Western Europe	400	433	390	407
EEC	301	325	297	299
Greece	130	127	117	122
Italy	110	136	126	123
Yugoslavia	69	67	56	66
Other Developed Market Economies	233	221	195	196
Japan	174	153	141	143
Eastern Europe and USSR	625	615	565	570
Bulgaria	139	157	155	124
USSR	302	301	285	290

Table 1. Tobacco leaf: Production in the principal producing countries, 1976-78 average, and 1979 to 1981.[5]

The Case for Developing a Tobacco Industry and/or Increasing the Amount of Tobacco Which is Grown In a Country

An argument along these lines could be as follows. Tobacco compares favorably with other crops even in countries where it yields a relatively low income per unit of land (see, for example, Figure 1). In comparison with other crops, such as cotton and ground nuts, the likely returns per hectare are considerably greater for tobacco. Also, tobacco produces relatively quick returns and is one of the few crops to survive during drought conditions when most other rain-fed crops tend to be spoilt.[6] In addition, there are a number of related industries, the formation of which will be facilitated through tobacco production, thus increasing employment. Such activities include retail outlets for purchase of consumer durables by farmers and processing plant employees, agricultural equipment stores, timber growing (for use as fuel), the transportation of tobacco, tobacco grading, re-drying and threshing plants, engineering firms specializing in the design and fabrication of leaf tobacco processing equipment, repair shops for vehicles and agricultural equipment, and brick making for barn construction.[7] This is in addition to the employment and wages arising from tobacco manufacturing itself (see Table 2).

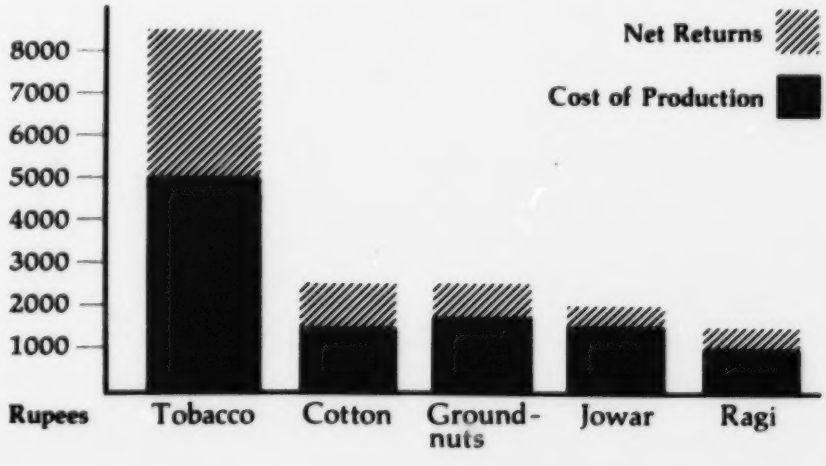

Figure 1. INDIA: Returns per hectare from tobacco and selected alternative crops in Karnataka, 1978.[8]

Moreover, the international tobacco companies are likely to provide an appreciable amount of investment and this would generate jobs and provide education. For example, they can be expected to teach farmers how to grow and cure tobacco. Also, they may provide training about optimal methods of cultivation, contemporary knowledge of tobacco growing, and information about the selection of appropriate land and suitable locations for leaf packing houses. They will supply, often at cost prices, the necessary fertilizers, insecticides, fungicides, tools and equipment. Similarly, companies supply appropriate seed or seedlings without charge, and sometimes provide the financial advances required by means of guarantees on government loans.[9] Tobacco manufacturing contributes some 2–5% to the total industrial output in a number of developing countries. The percentages vary widely, however. The percentages also vary in relation to the total primary agricultural production. In Zimbabwe, for example, the tobacco industry is the largest employer of labor and tobacco provides about 25% of the total agricultural income[10] (see also Table 3).

Tobacco products are also an important source of revenue, producing customs duties on imports and exports, as well as internal taxes. Such taxes are relatively easy to administer and can account for a significant proportion of total government revenue. In India, for example, tobacco accounts for some 11–12% of the total excise revenues received.[11]

	Number of Employees			*Wages and Salaries*		
	1977	1978	1979	1977	1978	1979
	(...thousands...)			(...thousands...)		
Developing Countries						
Mexico	5	5	5	18	21	25
India	334	...	...	72	...	...
Indonesia	162	143	...	47	43	...
Korea	19	15	15	33	39	...
Philippines	21	...	...	17	...	...
Developed Countries						
Canada	9	9	9	131	125	135
United States	61	59	...	960	1050	...
EEC						
Belgium	7	8	7	72	88	99
Denmark	4	3	3	40	44	51
France	11	11	11	...	...	...
Germany (Fed Rep)	22	22	21	263	324	376
Italy	20	20	...	108	135	...
Netherlands	24	23	23	116	...	...
United Kingdom	38	37	...	175	251	...
Japan	41	41	40	596	803	790
Bulgaria	23	21	22	39	40	46

Table 2. Tobacco manufacturing: Employment and wages in selected developing and developed countries, 1977 to 1979.[12]

Hence, there appears to be a good case for encouraging the development of a tobacco industry and/or increasing the amount of tobacco which is grown in a country because cigarettes can provide governments with one of their biggest and most reliable sources of revenue. They create many jobs, they generate surpluses in the country's balance of payments and they help development in those Third World Countries where tobacco is grown. To many Third World governments, tobacco is seen as a hope in the face of severe problems such as balance of payments deficits, rising energy costs, shortages of food, inflation, rising expectations on the part of their population and the threat of political unrest.

	Ratio of Tobacco to Total Primary Agricultural Production		
	1978	1979	1980
	(.....Percent.....)		
Developing Countries			
Malawi	7.4	7.9	7.9
Zimbabwe	17.4	23.7	23.8
Mexico	0.7	0.8	0.8
Argentina	1.1	1.1	1.1
Brazil	1.6	1.6	1.4
Turkey	2.9	2.0	2.3
India	0.9	0.9	0.9
Indonesia	1.0	1.0	1.0
Korea (Rep.)	3.1	2.6	2.7
Philippines	0.9	0.8	0.9
Thailand	2.7	2.9	2.9
Developed Countries			
Canada	4.4	3.3	4.2
United States	4.1	2.8	3.5
Greece	6.6	6.9	5.6
Italy	1.4	1.6	1.4
Yugoslavia	2.2	2.2	1.8
Japan	2.5	2.2	2.3

Table 3. The contribution of tobacco to agricultural incomes in selected producing countries.[13]

If one is tempted to accept this rationale, the point arises as to how much tobacco should be grown in a country. The above considerations suggest that tobacco growing and manufacturing represents a real benefit, but it should be noted that there must be limits to the extent to which such a program is implemented. For example, if many developing countries expand their tobacco growing, in the long run tobacco products will become more abundant and, consequently, cheaper. Moreover, this development would occur at a time when the amount of cigarette smoking in developed countries is decreasing and is expected to continue to decrease. Therefore, the demand for tobacco products is likely to decrease

in the developed countries, and export opportunities for tobacco products are likely to become smaller, reversing the current trend (see Table 4). If, as a result of this, an appreciable proportion of tobacco production is then made available to the local population, a significant amount of taxation may still be raised, but the health of the population will be adversely affected. Also, relatively high taxation levels might not be maintained if tobacco products are more widely consumed and lose their image of being an affordable luxury, and a symbol of prestige for the wealthier individuals in the poor areas of the world. Moreover, the various skills which will have been developed for tobacco growing may not immediately be applicable to other sectors of the economy. For example, the country may thus be at a disadvantage in producing the necessary food for its population. Related concerns are various ecological losses. Deforestation, for example, because of the burning of wood for tobacco curing, has been reported to be a serious problem, especially in countries which have found the cost of petroleum products prohibitive. However the main consideration is the effect of tobacco consumption on the health of a population. This will be discussed next.

The Health Consequences of Smoking, Particularly as They Pertain to a Developing Country

Smoking is a major cause of death by lung cancer, cardiovascular disease and emphysema, and has adverse effect on the outcomes of pregnancy. It also has marked effects on disability. For example, in a matched-pair analysis of a cohort, it was shown that the self-reported health of smokers was significantly less for smokers than for non-smokers.[14] The relative risks, or mortality ratios, of heavy smokers compared with non-smokers are of the order of 2, but for specific diseases such as lung cancer, the relevant mortality ratios are considerably larger.

For lung cancer, which in a developed country such as Canada represents the second largest cause of death for a number of male age-groups,[16] projections as shown in Table 5 indicate a long latent period. For example, these predictions suggest that female lung cancer mortality rates will rise, at least in some age-groups, until the beginning of the 21st century, even with a declining consumption of cigarettes, whereas the corresponding male rates are expected to decline by the year 2000. The reason for the difference is the relatively short time, compared with males, during which women have been smoking. Thus the data show that it may take as long as 30 to 60 years to reach stabilized mortality rates. This is of interest from the point of view of a developing country because if smoking prevalence rises sharply now, the effects on lung cancer mortality will only become evident after several years. However, in perhaps a generation a new epidemic of lung cancer can be predicted to occur which will affect predominantly middle-aged men. The long latent period for lung cancer contrasts with the case of heart disease, which is also appreciably affected by smoking, but which appears to have a relatively short latent period. The mortality ratios, or relative risks, have been reported to be of the order of

	Value of Tobacco Manufactures Exported			
	1976-78 average	1979	1980	1981 (est.)
	(.... US$ million ....)			
World	2070	3092	3643	3689
Developing Countries (incl. Asian CPE)	184	210	234	219
Zimbabwe	8	8	...	...
Cuba	51	49	52	55
Brazil	6	5	5	5
India	5	5	12	11
Korea (Rep)	...	3	3	3
Developed Countries (incl. Eastern Europe and the USSR)	1886	2883	3409	3470
Western Europe	1216	1882	2267	2314
EEC	1023	1652	2053	2093
Germany (Fed Rep)	191	327	359	366
Netherlands	283	487	612	621
United Kingdom	298	493	700	715
Switzerland	141	151	105	111
United States	647	964	1091	1265

Table 4. Tobacco Manufacturers: Exports from the principal exporting countries, 1976-78 average, and 1979 to 1981.[15]

10 for lung cancer, and 1.8 for heart disease in developed countries. There seems to be no evidence why similar mortality ratios would not also be expected to occur for developing countries. Moreover, there are various other diseases, particularly emphysema, for which high mortality ratios are observed between smokers and non-smokers. The point of this exercise is, of course, to stress the quantitative aspects of the risks from tobacco. Another way of doing this is to point out that it has been estimated that tobacco causes over 20 times as many deaths in Britain, for example, as traffic and is several thousand times greater as a health risk than background radiation from nuclear power stations.[17]

In economic terms, one would expect a number of effects to occur. First, the increase in any disease such as lung cancer will imply some life shortening. Consequently, if it is assumed that the total health care costs per person are approximately similar in the course of a life-span, a decreased life-span (which would be expected to occur if the incidence of a disease is increased), will increase the health care costs per annum per person,[19] although the health care cost per person during his or her life-time are similar.[20]

		AGE								
Year		30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	30-69[1]
Male										
	S1[2]	3.3	7.1	15.5	34.2	73	145	252.8	396.4	86.5
1990	S2	3.3	7.1	15.4	34	72.6	144.2	251.8	394.9	86.1
	S3	3.3	7	15.3	33.8	72.2	143.5	250.8	393.3	85.7
	S1	3.2	6.7	14.6	30.4	60.3	119.3	214.2	349.3	74.3
2000	S2	3	6.3	13.6	28.4	56.7	112.7	204.3	335	70.7
	S3	2.8	5.9	12.8	26.6	53.3	106.5	194.9	321.4	67.2
	S1	3.2	6.7	14.1	28.9	57	107.4	181.5	296.1	65.3
2010	S2	2.8	5.7	11.7	24.1	47.8	90.8	157	261	56.3
	S3	2.4	4.8	9.8	20	40	76.8	135.6	229.8	48.4
Female										
	S1	2.6	5.1	9.6	18.2	33.5	57.3	86.8	121.5	33.5
1990	S2	2.6	5.1	9.6	18.2	33.4	57.1	86.6	121.2	33.3
	S3	2.6	5	9.6	18.1	33.2	56.9	86.3	120.8	33.2
	S1	2.6	5	9.6	17.8	32.2	57.6	93.5	140.6	35.4
2000	S2	2.5	4.7	9.2	17	30.8	55.2	90.3	136.4	34.1
	S3	2.4	4.5	8.8	16.2	29.5	52.9	87.2	132.4	32.9
	S1	2.6	4.9	9.4	17.4	32	56.2	90.1	141	34.9
2010	S2	2.3	4.4	8.3	15.4	28.3	49.8	81.2	128.8	31.4
	S3	2.1	3.9	7.3	13.5	25	44.2	73.1	117.5	28.2
Stabilized Lung Cancer Mortality Rates per 100,000										
Male										
	S1	3.2	6.7	14.1	28.7	55.3	102	168.3	259.4	60.5
	S2	2.6	5.1	10.1	19.3	35.2	62.1	100.3	153.4	37.3
	S3	2.2	4	7.2	12.8	22.1	37.1	58.4	88.4	22.6
Female										
	S1	2.6	4.9	9.4	17.3	31.3	55	88	135.5	34
	S2	2.2	4.1	7.4	13.1	22.7	38.5	60.6	92.4	24
	S3	2	3.4	5.8	9.8	16.4	26.7	41.3	62.2	16.9
Theoretical Non-Smokers' Lung Cancer Mortality Rates										
		1.5	2.3	3.6	5.5	8.3	12.5	18.5	27.2	8.1

[1] Entries in age group 30-69 are age-standardized to 1960 United States population.

[2] S1—Scenario 1—age-sex tobacco consumption per person remains at 1981-85 levels.

S2—Scenario 2—age-sex tobacco consumption per person decreases 5% per quinquennium until stabilizing at 75% of 1981-85 levels.

S3—Scenario 3—age-sex tobacco consumption per person decreases 10% per quinquennium until stabilizing at 50% of 1981-85 levels.

Table 5. Projected age-sex U.S. lung cancer mortality rates for the years 1990, 2000, 2010.[18]

Second, if smoking were to increase, this would not only affect lung cancer mortality and associated health care costs, but would also increase other costs associated with lung cancer, including the costs associated with premature mortality and reduced productivity. In addition, it would increase the cost associated with other smoking-related diseases.

If the above-mentioned economic costs are investigated in greater detail, one might first consider the health care costs. The aim of such investigations is to estimate the health care costs attributable to or associated with smoking. These may be defined as the costs per capita of health care which would not be incurred if the population did not smoke. That is, health care costs per capita of the population being examined should be compared with those of a similar hypothetical population in which nobody smokes. The difference will estimate the costs associated with smoking. Such analyses have been carried out for populations in developed countries, for example for the Canadian population.[21] However, the methods outlined there would not be immediately applicable to developing countries where, in many instances, health care would not be available to the same extent as it is in countries such as Canada. That is, it might be assumed that the health care resources in a developing country would be mainly spent in the treatment of acute diseases, and would not be adequate for the treatment of chronic diseases which are affected by smoking, except for a minority of the population. However, it should be noted that even in developed countries health care expenditures have been rising rapidly and many ways of achieving "cost containment" are being explored.

At the same time there are two major issues connected with health which are particularly relevant for developing countries. One of these is the damaging effect of smoking on the health of children. For a number of countries, morbidity ratios exceeding 1 have been reported between children born to smoking mothers and children born to non-smoking mothers. This arises partly because children born to mothers who smoke tend to have a lower birth weight and other symptoms of prenatal oxygen deprivation. The lower birth weight, at least, has been shown to be largely independent of other social factors.[22] Tobacco's reported effects on growth and development include increased spontaneous abortion, perinatal mortality, malformations, Apgar scores, sudden infant death, teratogenicity and adverse effects on long-term growth and behavior. Another important contributor to higher morbidity ratios for the children of smokers is the higher incidence of respiratory disorders, both mild and serious.[23] The effect of smoking on newborns may be particularly important in developing countries: low birth weight has been reported to be the most important factor in infant mortality in Brazil, for example, which has a relatively high infant mortality rate.[24] The second major issue is that since smoking increases disability, it is likely to have an effect on productivity. This point will be discussed next.

The Effect of Smoking on Productivity in Developing Countries

Very few data are available to predict the decrease in productivity that would be expected to result if a population started smoking, but the changes could be substantial. For the Canadian population, it has been pointed out that a decrease of 0.5% per capita in productivity would lead to very substantial losses in financial terms. However, it should be noted that the effects of severe disability and premature death will depend on unemployment rates in a country. If there is a reasonably high rate of unemployment, there may not be an appreciable loss in productivity when a smoker dies before retirement, except possibly during the period in which a successor is being trained. Most of the productivity losses associated with smoking arise from short-term absenteeism or from performance at less than full efficiency because of respiratory problems or other smoking-related ailments. Several studies in Canada, the United States and Norway have shown that smoking workers have higher absenteeism rates than non-smoking workers. Unfortunately in most of these studies smokers were not matched by occupation, social class or other lifestyle variables. However, in one study in which matching was carried out, self-reported health status was found to be less for smokers than for non-smokers.[25]

Another consideration, which applies particularly for developing countries, is that the burden of looking after a person who has acquired a chronic illness because of smoking will often fall on other family members. Consequently, persons who might otherwise be employed in other work, particularly women, may have to spend much of their time in looking after relatives who are afflicted with a chronic disease or with the care of sick children. This presumably would affect overall productivity. It should be noted that the effects of smoking on productivity have not been investigated adequately and this can be regarded as an area in which additional studies would be helpful.

Income from the Tobacco Industry and the Question of Alternative Crops

As mentioned in the introductory section, a case can be made to show that tobacco growing represents an economic benefit to a country by providing work for farmers, and by providing income for other workers both directly and indirectly. However, if tobacco growing and manufacturing were not increased or not introduced, at least some of these incomes would be generated in presently available or other ways. Consequently persons who are or would be involved in the growing of tobacco, and persons involved in distributing and marketing tobacco products, would grow, distribute and market alternative crops or other products. It appears true that at present at least, tobacco growing is likely to yield more substantial benefits than other crops. However, two points should be noted in this connection. First, as mentioned

previously, if the demand for tobacco were to decrease substantially (as is happening in the U.S., where in 1984 about a quarter of the tobacco grown went unsold), the economic advantages of growing, manufacturing and distributing tobacco products might become financially appreciably less attractive. Second, even at this time and, in fact, since the depression, the U.S. has found it necessary to maintain a price support program which guarantees the tobacco farmer a certain price for his product and hence, profitability.[26] This represents an insurance policy and thus a subsidy. Other countries also, for example Argentina, are now facing difficulties owing to a decline in the level of tobacco prices.[27]

It is almost impossible to arrive at a reliable figure to allow for the effect of replacing tobacco by other crops. Many alternatives, at least initially, would not have the stable market and distribution systems that make tobacco farming productive. However, it may be assumed that the real economic benefit of the tobacco industry is not as large as the figures shown in the introductory section suggest. Some studies indicate that there are viable alternatives for tobacco farmers.[28]

Consideration of these points together with possible economic and other losses therefore suggests that tobacco growing and marketing represents mainly a short-term gain whereas other, less harmful products might be of greater benefit to a country in the long-run.

Taxation

Taxes on tobacco products, paid directly or indirectly by smokers, are often regarded as a benefit by governments. In fact, such taxation has been an important consideration in the conflict between those who stand to gain from tobacco growing and manufacture and those who are dedicated to suppressing it. To the former it is an instrument of oppression, its use motivated by the insatiable greed of governments. The latter see it as a potential weapon of great effectiveness. Legislators and civil servants find themselves caught in the middle, and usually approach the subject of changes in taxation with caution, lest a too marked change upset the balance between opposing factions and affect adversely a source of revenue.

In theory, from society's point of view, tobacco taxation represents a transfer payment and should not, strictly speaking, appear on the balance sheet. At the same time, taxation of tobacco products has been widely used as a method of raising government revenues. The extent to which governments rely on such taxation varies.[29] As a proportion of all excise revenues from all commodities, tobacco products for India are of the order of 11–12%.[30] The percentage of government revenues obtained from tobacco will vary with the proportion of smokers in the country, the amount of other sources of revenue such as petroleum products, and the relative ease of administration of various forms of taxation. However,

generally there is little doubt that for many countries, the tobacco trade represents a significant source of government revenue.

Taxation of tobacco products as a means of raising revenue has the attraction of being readily administered, especially when it is levied at the manufacturing and wholesale levels. Such taxation is therefore generally more readily collected than income tax, for example, since the collection of income tax requires a complicated and geographically dispersed administrative structure and a high level of literacy in the population. A second advantage of taxation of tobacco products is that such taxation tends to be politically acceptable. Tobacco taxes are voluntary in the sense that the individual has a choice of paying or not paying these taxes by choosing either to smoke or not to smoke. Moreover, smokers probably feel that the tax is equitable in view of the burden they are placing on society and indeed on themselves and their families. Hence, both ease of administration and political acceptability has made taxation of tobacco products an attractive source of income for governments.

When a government decides to increase taxes on tobacco products, the question arises of the appropriate level of taxation. On the one hand, a higher level will probably produce more revenue in the short run but, on the other hand, it may persuade many smokers to give up or to reduce their smoking, or non-smokers not to start smoking. The likely effects of an increase in a taxation level can be predicted by means of short- and long-term elasticities.[31] Detailed data on price elasticities are not widely available, although as measured from time series data, they are generally about -0.5. In other words, other things being equal, a price increase of 1% will lead, on average, to a 0.5% fall in consumption. If such a decrease were permanent, it has been estimated that a 10% increase in taxation would prevent about 10,000 tobacco-induced deaths per million cigarette smokers.[32] At the same time, it is important to distinguish between what are termed short-term and long-term elasticities. That is, taxation may have a different effect in the short-term and in the long-term. For many smokers a tobacco tax increase may have the psychological effect of leading to a reconsideration of the importance of tobacco usage to the individual, and to a short-term reduction in smoking. Then, over time, these individuals may adjust to the new price and revert to their former smoking habit. However, if a price increase deters a relatively large proportion of young people from taking up smoking, the associated reduction in demand is likely to persist in the long run. This effect may well be greater than the short-term reduction noted above. From the presently available data, it seems that although short-term price elasticities are usually less than 1, long-term price elasticities are often close to 1,[33] and it may be that price elasticities are different when prices are rising than when they are falling.[34]

The above arguments imply that an increase in taxation of tobacco products can be expected to lead to additional revenues, at least in the

short-term, although the deterrent to would-be smokers could make its effects felt in a later diminution of the tax base. Hence, governments may be tempted to implement a relatively substantial taxation on tobacco products. However, one argument against this is provided by the possibility that large increases might have a different effect from that which has been observed in the past, and short-term price elasticities may be greater than anticipated. This could lead to a decrease in revenues to the government and even to an immediate erosion of the tax base. In addition, a smaller proportion of smokers may lead to a reduction in the activities of the tobacco industry, and this may then adversely affect the economy of a country. This consideration may be particularly important for countries where substantial amounts of tobacco are grown. It should also be remembered that people would probably spend at least part of what they saved by not smoking on other taxable consumer goods.

Another argument against relying extensively on taxation of tobacco products to raise government revenues is that once a certain percentage of government revenues is raised by taxation, governments tend to rely on this and it may prove difficult to reduce this taxation in planning future budgets, or at least there may be a reluctance to do so. Yet another argument against appreciable increases in tobacco taxation arises in jurisdictions where such an increase may lead to a substantial amount of smuggling of cigarettes from a neighboring jurisdiction. For example, it is well known that a thriving trade in smuggling cigarettes is carried out across state borders within the United States and that organized crime is involved.[35] As another example, a recent report estimates that as much as 30% of the market in Colombia has been recaptured by smugglers because of the government's relaxation of anti-contraband measures.[36]

It has also been suggested that tobacco taxes are regressive, affecting fixed-income and lower income persons most,[37] although this may not be true for many developing countries at this time.

A final important point to be considered under the heading of taxation is that although governments have acted as though the maintenance and growth of the tax base were of primary importance, this is in direct conflict with stated long-term concerns about the health risks associated with tobacco smoking. The taxation issue cannot be considered separately from these concerns. In fact, to the extent that society attaches importance to the well-being of its individual members, reduction in smoking represents a clear benefit, and taxation represents one important approach to achieving a reduction in the number of smokers.

Other Considerations

The point of view stressed in this paper is that of society as a whole. However, from the individual's point of view, perhaps the most important consequences of smoking are the reduced enjoyment of life because of smoking-incurred illnesses and the pain and suffering incurred by the

family due to premature death because of smoking. Quantitative estimation of these effects involves assigning numbers to the value of life and the quality of life. No universally accepted methods are available for doing this. Moreover, such estimates will vary considerably depending on individuals and on the culture in which they live. Writers on the subject of economic costs of smoking frequently ignore this issue, presumably for the above-mentioned reason.[38] However, if tobacco promoters are ever required to compensate smokers or their families for the ravages of smoking-induced illness, the value of life will become much less of an abstraction.

From a government's point of view, it must therefore be remembered that the encouragement of a tobacco industry will later entail dealing with the consequences of tobacco-borne diseases, and perhaps even the compensation of individuals for pain, suffering and lost income. At the same time it might be noted that although these considerations are important, they do not always point against the growing of tobacco. For example, if a country is faced with starvation and the growing of tobacco will reduce the percentage of individuals who die from starvation, the choice may conceivably be between starvation at an early age and sickness in the more distant future.

	Present State Consumption per capita = 500g		Prediction for Future Consumption per capita = 1 Kg	
	Amount $(Millions)	% GNP	Amount $(Millions)	% GNP
Value of Output	1000[1]	1	1000-2000	1-2[1,2]
Exports	150	0.05	500	0.05-0.25[2]
Taxation Raised	1000	unaffected	1500	unaffected
Productivity Costs	small			0.5%
Health Care Costs	small			0.3%[3]
Value of Life (Quantity and Quality)	cannot be estimated reliably in quantitative terms.			

[1] Presumably some of this amount can be replaced by other crops and industry.
[2] Depending on the market value of tobacco at the time.
[3] Assumes 10% of total health care costs which are assumed to be 3% of GNP.

Table 6. Schematic Representation of the Effects of Increasing Tobacco Production for a Hypothetical Developing Country.

As pointed out previously[39] the actual problem will be different for different countries, depending on whether the country will become a tobacco grower, a cigarette manufacturer, an exporter, or an importer; on whether cigarette manufacture and/or distribution is a government monopoly; on whether advertising is allowed; on tar levels, and so on. For example, for countries such as China where cigarettes are manufactured and distributed by the state with little or no advertising, and where typical tar levels are relatively high, large changes effecting health could be

produced at little cost through tar level reductions, with great future benefits. However, how to give practical help to governments as to how to decrease tar levels, for example, is a major task.

Table 6 provides a broad outline that shows a schematic representation summarizing the arguments presented in this paper. This Table emphasizes the point that although there may be a short-term gain from tobacco in many developing countries, the long-term position is considerably less clear and is likely to show that the costs are greater than the benefits. The conclusion emerges that if a developing country is able to find an alternative to the growing and manufacturing of tobacco, it will undoubtedly become a healthier and better place to live. The challenge for governments, therefore, is to find such an alternative.

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Footnotes

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Nicotine Addiction: The Pharmacological Basis of Tobacco Dependence

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Introduction

In what has become a classical pronouncement, Russell[2] wrote that "cigarette-smoking is probably the most addictive and dependence-producing form of object-specific, self-administered gratification known to man". He went on to say that "this simply means that, throughout history, no other single biologically unnecessary object has meant so much to so many people who, after so few initiating experiences, have needed to have it so often, so regularly, and for so many years, despite trying so hard to do without it; and for which there is no other adequate substitute".

Since this statement was made, a further number of excellent reviews of tobacco dependence have been published.[3] This brief review draws freely on the above material. An attempt is made herein to reduce to a few pages the most salient points, and to suggest where the thrust of further activity in this area might best be directed.

Tobacco Use as an Addiction

The American Psychiatric Association *Diagnostic and Statistical Manual of Mental Disorders III* defines both a Tobacco Withdrawal Syndrome and a Tobacco Dependence Disorder with very specific and identifiable criteria for diagnosis.

Pollin[4] states that dependence "in the classic sense is characterized by: (1) persistent regular use of a drug; (2) attempts to stop such use which lead to discomfort and which often result in termination of the effort to stop; (3) continued drug use despite damaging physical and/or psychological problems; and (4) persistent drug seeking behavior". By all these criteria, the use of tobacco, especially in the form of cigarettes, qualifies as a dependence process. In a recent editorial he further emphasizes the concept that "addiction is the key step in causation of all tobacco-related diseases".[5]

In what is a very useful form in the present context, the United States National Institute on Drug Abuse (NIDA) Technical Review on Cigarette Smoking as an Addiction reduces Pollin's stated criteria to a general definition of addiction as follows:

> *"In its broadest sense, addiction is a state characterized by the repeated ingestion of a substance that is toxic and leads to undesirable social consequences".*

There is little current debate concerning the existence or tenacity of tobacco dependence. Indeed, if tobacco use were not dependence producing, it is highly probable that smoking-related diseases, as we know them today, would not exist. However, a critical mechanistic understanding of the addictive processes underlying tobacco use at the biochemical or

pharmacological level, and a clear delineation of the behavioral antecedents and concomitants, do not presently exist. Until this information becomes available it will be difficult to develop reliable cessation techniques and to mount effective tactics for primary prevention of this disorder.

The Role of Nicotine in Tobacco Dependence

Nicotine is the prime suspect as the major pharmacological modulator of tobacco use. However, a myriad of factors of a non-pharmacological nature are involved in acquisition, control, and cessation of this ubiquitous human activity.[6]

The dominant alkaloid present in tobacco, nicotine is rapidly absorbed from the lungs when presented as the sub-micron aerosol resulting from the high-temperature combustion of cigarette tobacco.[7] It is quickly distributed to the brain and the rest of the body, and may exert its effects both through action on general acetylcholine receptors, and on more specific "non-cholinergic" nicotine receptors present in central nervous tissue.[8] According to the operant conditioning model of addiction, the internal stimuli produced by this drug reinforce behavior leading to its consumption. Its precise role, however, is not easy to define.

Published research suggests that nicotine exhibits weak reinforcing properties in animals on fixed ratio schedules, but that reinforcement is stronger when second order schedules are employed.[9] This contrasts strongly with such drugs as morphine and cocaine which are readily self-administered.[10]

Henningfield examined common factors found in dependence on tobacco and opioids but explicitly avoid equating cigarette smoking with nicotine dependence or nicotine self-administration.[11] They conclude

> *"...a conservative evaluation of the available data ... show that, while nicotine accounts for many of the effects produced by cigarette smoking, clinical and experimental manipulations of nicotine administration do not affect cigarette smoking to the degree that would be predicted if nicotine were the only factor controlling cigarette smoking".*

Clearly, behavioral factors play an extremely important role. A further elaboration of this and associated concepts is found in Henningfield's more recent[12] comprehensive review of the behavioral pharmacology of cigarette smoking.

Notwithstanding the above, the role of nicotine is probably critical in both the acquisition and maintenance of tobacco dependence. It is a powerful pharmacological agent which stimulates the release of a variety of endogenous neurotransmitters and hormones, and may result in the release of beta endorphin. The many neuropharmacological and endocrine properties of this drug have been well documented.[13]

Nicotine is itself mood-altering or psychoactive, and during initial administration to humans produces an initial euphoria which has been compared to the effects of both morphine and cocaine.[14] At the same time, acetaldehyde, an important gaseous constituent of cigarette smoke, may form condensation products with endogenous neuro-transmitters such as dopamine, and mimic the effects of the endorphins.

Non-Pharmacological Factors

It is interesting that two of the most commonly abused drugs in contemporary society (alcohol and tobacco) appear to exert their effects by more subtle changes in central nervous function than those produced by other classical drugs of abuse such as the opioids and psychostimulants. This very subtlety of relationship between drug consumption per se and the dependence process may render the process of acquisition and maintenance of dependence more susceptible to behavioral influences—and, certainly, less susceptible to simplistic treatment methods (whether pharmacological or behavioral).

A host of behavioral factors have, in fact, been implicated in tobacco use. Among the most potent behavioral variables associated with the establishment of smoking are social pressure and imitation of exemplars.

Once smoking is established as a habit, pattern consistency is provided by environmental influences through stimulus control as well as by pharmacological regulation.[15] Kozlowski[16] has pointed out the importance of contemporary norms for socially acceptable behavior, and the role which convenience has played in determining the preferred form of tobacco use in different eras (noting that nicotine, in some form, is one common element—a necessary but not sufficient condition for tobacco's historical popularity). Further, he has written on the interaction of psychosocial and biological variables in the control of smoking behavior.[17]

Summary Comment

Our current knowledge suggests that nicotine plays a prime pharmacological role in tobacco dependence, but the interactions of this, and possibly other tobacco constituents, with behavioral and social determinants of use remain unclear at a basic level. Both tolerance and physical dependence to nicotine probably play a role in tobacco addiction. During acquisition of the smoking habit tolerance to aversive cholinergic effects of nicotine permit gradual increases in dose. However, within wide dose limits psychosocial factors appear to exert a major role once a smoking habit has become established. More research remains to be done to fully characterize the syndrome of smoking withdrawal—most particularly with respect to the persistent craving which many ex-smokers experience for substantial numbers of years following complete cessation.

The role of blockers of the central action of nicotine, such as mecamylamine (especially in low doses) remains to be clarified as an

adjunct to the control of craving. The role of substitution therapy with nicotine-containing chewing gum (and possibly with portable, controlled nicotine aerosols) during the transition to full cessation requires further examination. The possible longer-term utility of such adjuncts, as replacements for tobacco in recidivist users, while unpopular in many circles, cannot be ruled out—especially in certain populations of smokers (for example, those with ischaemic cardiovascular disease for whom carbon monoxide may represent a more major threat than that posed by nicotine alone).

In the face of an established tobacco dependence, attempts to reduce hazard by reducing constituent exposure are probably warranted. However, given the pharmacological importance attached to the role of nicotine in tobacco dependence, and the problems associated with the use of "less hazardous cigarettes", it is fair to assert that primary prevention of the smoking habit through educational and legislative means is a more appropriate way to achieve long-term benefits to society as a whole than pharmacological manipulations of either the drug delivery system (for example, the cigarette) or of the tobacco user.

Footnotes

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World Trends in Smoking

R. Masironi[1]

Since its discovery at the time when Columbus landed in the New World, tobacco has played an increasing social and economic role in Western societies. In recent times, however, tobacco smoking has brought about a major health disaster to these societies. The importance of tobacco in economics, but also as an adverse health agent, has recently spread to developing countries as well. The spreading of the smoking habit, particularly cigarette smoking, has occurred like an epidemic: at the beginning it moved from one social group to another within very few "western" countries; then it spread from country to country and from continent to continent, affecting developing countries as well.

In the developed countries smoking started as a predominantly male phenomenon. Women started to smoke much later. But while men were usually the first to stop, smoking continued to increase among women and youth. Luckily, even among these groups smoking has recently started to level off and even to decrease—obviously as a result of intensive smoking control and educational activities. Differences are apparent in the developed countries between people of higher socio-economic groups who started to smoke first, and the lower socio-economic groups who followed at a later stage. But while the higher socio-economic groups have lowered their smoking rates rapidly in recent decades, those in the lower socio-economic groups still smoke heavily. An inverse pattern is instead occurring in developing countries, where it is the elite that can afford to smoke heavily.

Probably the earliest formal fashion for tobacco use, pipe smoking, had great ceremonial importance in the cultures where it originated. As a tobacco vehicle, however, the pipe has been largely displaced by the cigarette within the 20th century. The massive consumption of cigarettes is the cause of the modern epidemic of lung cancer and of other smoking-related diseases such as the chronic respiratory diseases, some forms of cardio-circulatory disease, pregnancy complications, and harmful effects on infants forced to passively breathe someone else's smoke. The smoking materials used in some developing countries may be even more noxious than the materials smoked in the developed countries as they yield much higher levels of toxic components, particularly tar and nicotine.

Although cigarette smoking is already the predominant type of smoking in most developing countries, indigenous forms of smoking, as well as chewing, are also widespread in some regions. Mention can be made here of the bidi, mostly smoked in Bangladesh, India and Nepal; chutta, which is common in parts of rural Nepal, as well as the water-pipes, for example, hookah, goza and narghile, which are smoked in Bangladesh, India, Nepal, Pakistan, Egypt, Tunisia and other countries of the Middle East. Tobacco chewing and snuff are widespread in many developing countries. The tobacco is chewed either alone or mixed with other vegetable and chemical products.

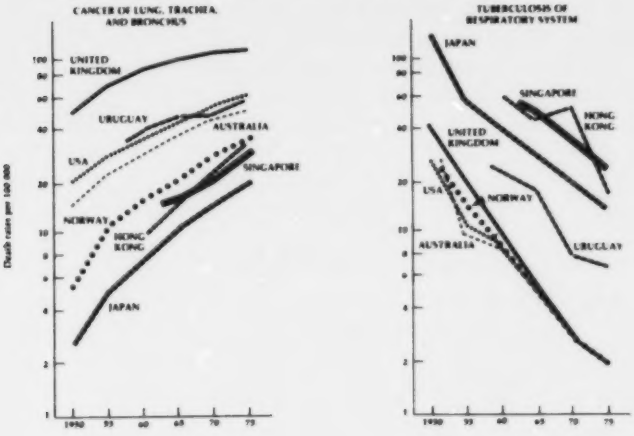
Smoking-related diseases that are caused by widespread use of cigarettes are well known: they are myocardial and circulatory complications, lung cancer, other forms of cancer, chronic bronchitis and emphysema, pregnancy complications, etc. In developing countries the use of other forms of tobacco, as mentioned above, brings about the same as well as other types of diseases, namely, cancer of the mouth associated with tobacco chewing, respiratory diseases associated with the communal form of waterpipe smoking, increased susceptibility to bladder cancer in people affected by, for example, bilharzia, etc.

For at least four major diseases: cancer of the lung, coronary heart diseases, peripheral vascular diseases and chronic obstructive lung diseases, the evidence suggests that almost the whole of the difference in mortality between smokers and life-long non-smokers is due to tobacco. These are among the most common causes of death and disability in men in developed countries. It has been calculated that 85% of the deaths due to cancer of the lung and chronic obstructive lung diseases, and 25% of the deaths due to ischaemic heart disease can be attributed to smoking. The number of deaths in such countries that are caused prematurely by smoking is, therefore, staggering. In the United States, 350,000 premature deaths per year are attributed to smoking, and in the United Kingdom, 100,000. In the European Economic Community, 44% of all deaths due to lung cancer, coronary heart disease, and chronic bronchitis are attributed to smoking. Worldwide, it has been calculated that about 600,000 new cases of lung cancer and over two million premature deaths each year occur because of cigarette smoking. More and more of these cases and deaths occur in developing countries.

There are several other types of disease that have nearly always been found associated with or aggravated by smoking, including various types of cancer. Cancers of the mouth, pharynx, larynx and esophagus have a complex relationship with both smoking and alcohol and it is difficult to estimate how far the excess incidence of these cancers in smokers is due to tobacco and how far it is due to the combination of the two factors.

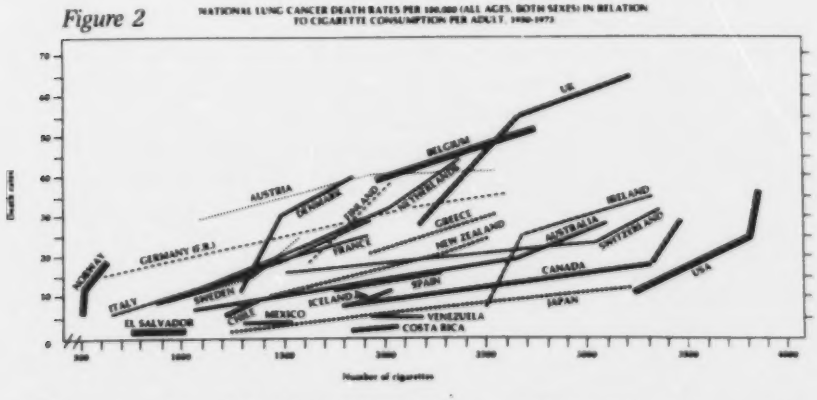
In addition to its effects on the smoker, smoking by pregnant women has been found to have harmful effects on the foetus. For example, about a 9% reduction in birth weight results in a small increase in perinatal mortality. Examples (Figure 1) demonstrate the burden of two health problems, both of relevance to the respiratory tract, which have moved in opposite directions during the last decades. While tuberculosis has been decreasing in most countries, there has been a rapid increase in smoking-related diseases, of which lung cancer is the most striking example.

Figure 1



Trends in national consumption of tobacco generally precede and parallel national lung cancer rates (Figure 2). They reveal generally a rising consumption in most countries. In some developing countries there has been a similar increase in cigarette consumption, but the per capita consumption is, fortunately, still much less than that for the developed countries (Table 1). However, the percentage of smokers in developing countries is quite high, usually higher than that in the industrialized countries (Table 2). With increasing purchasing power the number of cigarettes smoked by such high numbers of people will inevitably increase, bringing in its wake increased morbidity and premature mortality.

Figure 2



The proportion of illness attributable to smoking varies from country to country as a result of differences in the amount of illness due to other

causes, the prevalence of etiological agents that interact with smoking in the production of disease, and the smoking habits of the population, both currently and in the past. In countries where parasitic and infectious diseases and malnutrition are common, for example many tropical countries, the proportion of illness attributable to smoking is small, particularly as the consumption of tobacco in these countries tends also to be small.

Country	*Per Capita Consumption*	*Country*	*Per Capita Consumption*
Cyprus	3,117	Jordan	867
Greece	2,927	Algeria	861
Cuba	2,857	Belize	850
Canada	2,797	Chile	847
United States	2,678	Nicaragua	846
Spain	2,658	Albania	786
Japan	2,636	Barbados	785
Hungary	2,570	Tunisia	768
Poland	2,517	Korea-North	713
Bulgaria	2,472	Guyana	656
Australia	2,340	Jamaica	650
Yugoslavia	2,323	Dominican Republic	614
New Zealand	2,305	Thailand	605
Switzerland	2,171	Panama	599
Austria	2,111	Indonesia	577
Belgium-Luxembourg	2,055	Iraq	574
Singapore	1,961	Honduras	563
Hong Kong	1,957	Norway	556
Lebanon	1,926	Morocco	537
Germany (F.R.)	1,867	Congo	531
Italy	1,854	Paraguay	521
United Kingdom	1,818	El Salvador	508
Czechoslovakia	1,812	Ecuador	508
Germany (D.R.)	1,796	Senegal	448
Ireland	1,778	Vietnam	424
Korea-South	1,747	Ivory Coast	422
USSR	1,715	Sierra Leone	419
Libya	1,688	Pakistan	396
Israel	1,656	Angola	375
Netherlands	1,652	Iran	364
Denmark	1,636	Sri Lanka	341
France	1,608	Guatemala	325
Romania	1,593	Zimbabwe	319
Sweden	1,543	Haiti	316
Taiwan	1,531	Kenya	283
Portugal	1,428	Zambia	223

Philippines	1,371	Mozambique	221
Trinidad and Tobago	1,318	Ghana	218
Turkey	1,305	Peru	216
Uruguay	1,241	Laos	209
Malaysia	1,222	Bolivia	206
Mauritius	1,215	Malawi	197
Finland	1,148	Tanzania	181
Argentina	1,136	Cameroon	175
Venezuela	1,089	Bangladesh	170
Brazil	1,051	Uganda	146
Syria	1,049	India	141
South Yemen	1,038	Zaire	129
South Africa	1,002	Cape Verde	117
Fiji	986	Nigeria	98
Surinam	975	Nepal	83
People's Repub. China	900	Burma	71
Colombia	873	Ethiopia	48

Table 1—Yearly Per-Capita Manufactured Cigarette Consumption in 110 Countries in 1982.

With so many diseases caused or aggravated by smoking, so many premature deaths attributable to it, and the habit so widespread throughout the world and becoming increasingly more common in countries where it has as yet been rare, it is not surprising that the World Health Organization considers smoking as "probably the largest single preventable cause of ill health in the world today".

In some industrialized countries the impact of anti-smoking education on the amount smoked has been substantial. In countries such as Norway, Finland, the United Kingdom and the United States, where smoking had been prevalent, the proportion of smokers has fallen and so, after a delay of a few years, has the average amount consumed. In some of these countries, too, the prevalence of smoking among women and young people, which had been begun to increase many years after it had become common in men, has ceased to rise and begun to fall.

Where decreases in smoking habits have occurred, they have begun first in the medical profession, extended to men and women in professional and other similar occupations, and are now spreading to other population strata. This steady progression through society holds out hope that smoking can be progressively diminished and largely eliminated, provided that smoking control and health education approaches are intensified.

These trends in smoking habits have been accompanied by substantial reduction in the mortality from smoking-induced diseases in some countries, like Sweden and the United States.

But in other countries, such as Italy and Japan, where smoking has continued to increase until recently, the mortality from lung cancer continues to rise. While tobacco consumption is slowing at 1.1% yearly in industrialized countries, it is rising by 2.1% a year in the third world.

	Male	*Female*		*Male*	*Female*
Country	%	%	*Country*	%	%
Nepal	79-87	14-72	Switzerland	50	20-37
Indonesia	61-75	5-10	Ireland	49	36
Papua New Guinea	77-85	76-80	Singapore	49	8
Bangladesh	70	20	Sri Lanka	48	2
Japan	70	14	Pakistan	44-49	4-6
Thailand	51-70	4-40	Israel	44	30
China	35-95	1-35	USSR	44	10
Zambia	63	56	Norway	40	34
India	29-66	3-26	Egypt	40	1
Poland	63	29	West Germany	40	29
Tunisia	58	6	UK	38	33
Hawaii			Canada	37	29
Caucasians	61	50	Australia	37	30
Hawaiians	57	47	Guatemala	36	10
Chinese	37	18	Hong Kong	33-37	4-5
Filipino	48	28	USA	35	32
Japanese	53	26	New Zealand	35	29
Brazil	52-54	20-37	Sweden	30	30
Italy	54	32	Ivory Coast	24	1
Kuwait	52	12	Brunei	20	7
Romania	52	9	Malaysia	18	2

Table 2—Percentage of Adult Male and Female Smokers in Various Countries, 1970's-80's. (Data collected by WHO from various sources.)

Over the past twenty or thirty years there has been an upward trend in the number of cigarettes smoked per day. The majority of cigarettes sold in the more highly developed countries are of the filter-tipped variety and a further behavioral trend in these countries has been a shift to cigarettes with a low tar/nicotine yield. It has been shown, however, that smokers of low-yield cigarettes smoke more than the smokers of high yield cigarettes and therefore any beneficial effect which might have been achieved from smoking low yield cigarettes must be weighed against the adverse effect of an increase in the number of cigarettes smoked. Although the smoking of low-yield cigarettes is apparently associated with a small—20 to 30%—decrease in the number of cases of lung cancer, such a decrease did not occur in the case of cardiovascular diseases, chronic respiratory diseases, pregnancy complications or infant morbidity. A further negative effect of low-yield cigarettes is that, by being milder than the high tar varieties, they lead more women and children into taking up the smoking habit.

The economics of tobacco production and the political pressure exerted by the transnational tobacco industry are the major stumbling blocks on the way to eliminating this health hazardous behavior—tobacco consumption. Developing countries, here again, find themselves at the losing end. As an UNCTAD report made it clear "...the developing countries are totally at the margin in the marketing decision process".

These countries gain only an insignificant share of the total profit made from tobacco growing as their aggregate receipts from the tobacco industry are based, almost exclusively, on the demand response and the marketing decisions determined by the transnational tobacco companies, which are mostly foreign-based. A more recent report on tobacco, issued by the Ministry of Agriculture of Tanzania, also indicts the tobacco companies as being "in a position to dictate terms as they like, and often reject tobacco just for the sake of forcing the Tobacco Authority of Tanzania to reduce prices". This report, and others as well, also point to the devastating environmental effects of tobacco-growing. Approximately one hectare of forest is required to cure one hectare of tobacco. Disappearing woodlands are now an identifiable problem associated with tobacco growing in several developing countries, for example Nepal, Sri Lanka, Pakistan, Tanzania, Sudan.

In many countries, especially developing ones that don't yet grow tobacco, increasing trends to imported cigarette consumption bring about massive economic losses in hard currency.

A report from the Ministry of Economics and Planning of Sudan revealed that in 1983 the overwhelming majority of tobacco consumed in the country was imported for a price of about 40 million Sudanese pounds.

The report emphasized that "for a country like Sudan with severe balance of payment problems, this increased import bill contributes to the widening of the external gap affecting adversely the balance of trade and the national economy".

A similar situation was ascertained in Egypt where 25 million Egyptian pounds were spent in 1976, an increase of 20% from the year before. In many developing countries, the average laborer may spend as much as 20% of his meager salary on tobacco, if he is a smoker.

The economic benefits to a developing country which are derived from tobacco are, therefore, not as large as the tobacco transnationals would like uninformed people to believe. On top of this, tobacco consumption decreases the export earnings of a country while, as a tragic sequel, increasing its burden of ill-health and soaring medical costs. Until several years ago, coronary heart disease and cancer of the lung were practically unknown in developing countries. Now they are

among the main causes of death in many such countries, in parallel with increasing smoking rates.

The lesson is clear. The cigarette menace must be reduced as rapidly as possible and its spread to susceptible target groups: women and youth, must be prevented. The message is particularly relevant in a developing country situation. In the absence of strong and resolute action, we face the serious probability that the smoking epidemic will have affected the developing world within a few years, and a major avoidable public health problem will have been inflicted on countries least able to withstand it for the twin reasons of commercial enterprise and government inactivity. Failing immediate action, smoking diseases will appear in developing countries before infectious diseases and under-nutrition have been controlled and the gap between rich and poor countries will thus be further expanded.

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Anti-Smoking Programs

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Various factors have hindered progress in the development of anti-smoking programs. Firstly, as basic causes of smoking related diseases are recognized, there has been a tendency to invest scarce resources in increasingly intricate studies of disease causation processes. Secondly, where funding is secured for intervention to reduce smoking, we often focus on individual-level, clinically-oriented interventions. The socioeconomic gradient in rates of smoking and smoking-related disease also slow society's response to this modern disease epidemic. The greatest factor inhibiting progress, however, is the cost of prevention. This is a particularly acute problem in light of the dimensions of the industry that is dependent upon tobacco consumption, and which employs thousands of people and deliver regularly a substantial portion of our tax revenues.[2] On a national scale, dramatic changes in tobacco consumption have occurred in response to successive measures,[3] but these have been limited largely to males in higher income groups. We have witnessed few examples of the kind of bold international efforts comparable to those involved in the control of communicable disease, where some types of infections have been initially eradicated.

Cessation Programs

Most programs to promote cessation of cigarette smoking have been developed for quasi-clinical applications with individuals and small groups. A broad range of activities have been promoted, including hypnosis, transcendental meditation, group therapy and aversive conditioning. Evaluations of these efforts show inconsistent results.[4] Scientific studies of smoking cessation have concentrated on the application of theories from behavioral psychology.[5] The most promising research is concerned with the skills that are involved in the maintenance of non-smoking,[6] and in relapse prevention.[7] Comprehensive programs of behavioral training have, in some studies, shown long-term success rates above 50%.[8] However, the broad-scale application of complex, clinically-oriented anti-smoking programs is constrained by their costs. The kind of intensive "treatment" for smoking that has been the subject of most attention is not practical on a large scale, although on a "fee-for-service" basis it is viable among upper income groups.

The greatest limitation on the usefulness of individual or small-group "therapy" for smoking is the fact that most smokers prefer not to participate in such programs, and tend to rely instead on "self help" with minimal formal assistance. DiClemente and Prochaska[9] have identified processes in self-change that correspond to stages of learning to stop smoking and to maintain non-smoking. Programs to promote self-change through mass media, particularly television, have been developed in many countries.[10] Studies of television and other media-based methods are also described by various authors.[11] There is evidence that effects of media programs may be enhanced if a telephone

"hot-line" is offered[12]. Flay reported a study in which children of smokers were taught at school to reinforce their parents' attempts to stop smoking in association with a series of television news broadcasts on smoking cessation.[13] Parents of students whose teachers were trained to implement the program were more likely to attempt cessation (38%) than were the parents of students whose teachers were not trained (24%). At one-year follow-up, the cessation rates in the two groups were 19% and 13%, respectively, clearly demonstrating that children can enhance the effectiveness of a media program which encourages parents to stop smoking.

1. Stanford Three-Community Study

The best-known large-scale community study involving smoking cessation was conducted by Farquhar, Maccoby and colleagues at Stanford University.[14] It involved three small communities (approximately 20,000 population) which were non-randomly assigned to control, media-only or media and face-to-face programs.

The program of mediated communication was conducted over three years (1973-75), at greatest intensity in the first and second years of work. Television, newspapers, radio, billboards and direct mail advertising were designed to provide information and to model attitudes and skills that would promote behavior changes so that changes leading to lowered cardiovascular risk, for example weight reduction, lowered fat consumption, increased exercise, etc., might be achieved. To encourage cessation of smoking, information about its harmful effects was given, along with advice on how to stop smoking. In booklets mailed to the sampled households in two communities, instructions were provided for simple self-control skills.[15] In brief television and radio communications, actors were shown recommending or modeling cessation of smoking in a variety of authoritative and entertaining ways.

The face-to-face "intensive instruction" program was provided to approximately 120, including adults in the families of about 100 randomly assigned "high-risk" participants in one community. Activities were based on principles of behavioral psychology and group dynamics and designed to reinforce and train skills for behavior change.[16] The first-year program consisted of classes and home-visits, mostly during the summer of 1973. During the summer of the following year, aggressive follow-up activities were conducted to reinforce smokers who reported cessation and to encourage and train those who were not yet able to give up smoking. This maintenance program included training in stress-management and other intensive, individual counseling for those who consented to continuing contact. In the third year, the activities were gradually reduced to telephone contacts and a small "re-union" in the summer of 1975.

Over the three years of study, the prevalence of smoking decreased markedly among the group receiving mediated and face-to-face

communication. The group receiving media showed an initial decline relative to the control, but over the three years the change did not differ from the modest reduction observed in the control town. Because the "high-risk" samples included most of the older smokers in each community, the data on cessation in the complete samples corresponded closely to that of the high-risk group. The serum thiocyanate tests indicated very slight over-reporting of cessation in the intensive instruction group. Adjusting for attrition, thirty-two percent reported sustained cessation.

2. Australian North Coast Program

A controlled community study very similar to the Stanford Three-Community Study was conducted by the regional Health Department of New South Wales, Australia.[17] In the Australian Study three communities were assigned to one of three conditions: control, media only, or media and community programs combined.

The media program included output from a television station, a radio station, and several small newspapers, supplemented by other materials such as stickers, poster, T-shirts, and balloons. The three stages of the media campaign were designed to sequentially raise awareness, provide information and stimulate action. Advertising space was purchased to insure presentation of television commercials during peak viewing periods. Beginning in October, 1979, the print advertisements were suspended for several months because of a complaint to the Media Council of Australia. The overall campaign continued for approximately one year. The community program that was applied in Lismore was varied. Several different kinds of groups, clinics, workshops and other interpersonal support systems were organized. Physicians were also involved. A total of 386 smokers participated in these activities, most (150) joining a one-day workshop. The three month success rate in smoking cessation, measured by telephone interview, was sixteen percent for the workshop participants. The highest success rate (48%) was found for the 40 persons who received help kits from physicians. The community program also included other programs, for example physical fitness and stress management, which may have facilitated the cessation of smoking.

Analyzing results according to a multiple *logistic* model controlling for age and sex differences, a significant treatment effect (p 0.05) was observed. Thiocyanate analyses showed no difference between towns in the small estimated invalidity of self-reports (3%). Among men and women in various age groups, consistently different rates of change in prevalence of smoking were found. The researchers reported finding no evidence of effects on knowledge or attitudes.

The magnitude of the apparent effect was particularly encouraging among the youngest age groups (18-25) where absolute reductions in prevalence of smoking showed a three-fold difference between the maximum intervention (15.6%) and control towns (5.0%).

3. The North Karelia Project

The best-documented long-term community study is being conducted in Finland by Puska and colleagues.[18] This work also began in 1972 and has continued through the present. The research involves the comparison of changes in cardiovascular disease risk factors in two neighboring countries of eastern Finland, Kuopio and North Karelia. Both are large rural areas with numerous small farming, lumber or mining communities and a single major town. North Karelia is representative of eastern Finland as a whole in having one of the world's highest rates of cardiovascular disease. Financial support for the intervention came from the Finnish Ministry of Health, following a request from formal leaders in North Karelia for help in reducing the high mortality and morbidity levels. Research funds were awarded by the Academy of Finland. The neighboring county of Kuopio was selected as a reference or control location. In North Karelia a broad program was implemented to provide new services, education and training through community health centers, the mass media and a variety of community organizations. During the second five years of the project, media programs were carried out on a national level, with special organizing and support for activities in North Karelia.

In both counties, independent samples of households were drawn in 1972, 1977 and 1982, with approximately 5,000 persons aged 25-59 in 1972 sampled in each area in the first two surveys and about 4,000 age 25-64 in the 1982 measurement. Response rates were generally excellent, and close to ninety percent of the sample participated by attending local survey centers in the spring of each of the survey years (1972, 1977, 1982). Self-reported cigarette smoking behavior was measured in all three surveys. In the 1977 survey, serum thiocyanate values were estimated for a sub-sample and in the 1982 survey for all participants. The age-adjusted partial correlation between daily reported number of cigarettes and serum thiocyanate in 1982 was approximately 0.7 among men and women in both areas. In the years when the larger surveys were not conducted, smaller samples (1,200 to 3,500) were selected yearly for a postal survey of North Karelia. Together, these measurements provide a comparative view of trends over ten years in the populations of both countries and a year-to-year picture of the changes in North Karelia.

The program of service, education and training was very broad in scope. Initially, for reduction of cigarette smoking, an intensive educational campaign was conducted, with cooperation from the news media. Physicians and public health nurses staffing community health centers were provided special training and encouraged to recommend cessation to all patients visiting the centers. Tens of thousands of leaflets and posters were distributed to encourage non-smoking. With assistance from Heart Association volunteers in each small community, informal restrictions on smoking and point-of-purchase advertising were adopted. During 1976 and 1977, these measures became part of a package of national legislation which increased cigarette taxes, mandated that educational activities be

supported with a portion of cigarette tax revenue, directed health services to provide information services, limited public smoking and banned tobacco advertising.

During the second five-year period an effort was made to provide nation-wide applications, while maintaining intensive community work in North Karelia. A series of programs was broadcast nationally on television to demonstrate how "average" persons stop smoking.[19] In association with these broadcasts, special organizing campaigns were conducted in North Karelia to increase social support for persons attempting to stop smoking. These activities occurred in the winters of 1978, 1979, 1980 and 1982. Nationally these programs were seen by a majority of the population, with higher viewership in North Karelia. During the first broadcast series an effort was made to encourage the formation of informal, volunteer-led self-help groups who would view the broadcasts together. However, very few volunteers succeeded in establishing groups and in subsequent years the focus has been on the training of volunteers to provide cueing, reinforcement and support even less formally in their incidental, day-to-day contacts with cigarette smokers.[20]

Over the ten-year period self-reported numbers of cigarettes smoked per day fell by more than one-third among men in North Karelia.[21] In the control or reference area, less than a ten percent reduction was observed. Changes in prevalence of smoking account for most of this difference. Among women there was no evidence of an effect, with rates of smoking going up in both areas. The year-to-year data from North Karelia show an interesting pattern, with the sharpest declines among men associated with the first year of work and with the television broadcasts and associated activities in 1978-80 and in 1982. Since 1978, when new anti-smoking laws were passed, the proportion of male smokers aged 15-64 has changed from 44% to 31% in North Karelia, and from 39% to 35% in the rest of the country, a difference of nine percent in absolute rates of change over that four-year period. Although the effect of changes in smoking cannot be separated from the effects of new hypertension services and other measures to prevent cardiovascular disease, there is some early indication that mortality rates may have been influenced by the program: a twenty-four percent decline in cardiovascular deaths has been observed in North Karelia, compared to a twelve percent decline nationally in Finland.[22]

The North Karelia Project has received much attention and various points of controversy have been widely discussed. The methodology of the study does not compare to that achieved in controlled clinical trials, but it may have been the optimal design feasible in the circumstances. Puska and his colleagues point out that "it is easy to say that the North Karelia Project was successful because of the unique historical background and because the conditions in North Karelia were favorable for the program. However, at the planning stage great concern was expressed because the area was rural, of low socioeconomic status with high unemployment,

etc." Because a large number of independent units were not randomly assigned to experimental and control conditions, the Finnish study cannot be taken as a conclusive test of the effects of community programs, but it does provide a promising illustration and evaluation of what can be achieved through broad and vigorous intervention to reduce smoking behavior. Its major strengths are the relatively large number of different communities that were studied and the ten-year follow-up interval.

4. Environmental Intervention

Public health scientists often recognize that public education programs need to be supplemented by environmental interventions.[23] But political factors limit the scope of governmental and private sector intervention.[24] Some practices, such as selective denial of employment to smokers, may be questioned on ethical grounds. However, rewarding employees for non-smoking can be effective. There are serious methodological problems in the evaluation of anti-smoking policies, but some findings have been accepted. In the United States, econometric analyses of year-to-year variation in tobacco consumption has indicated that national habits were altered by counter-advertising, by restrictions on advertising, by warning labels and by symbolic or governmental actions such as the Surgeon General's Report of 1964.[25] Complete prohibition of smoking is not widely viewed as an acceptable alternative, but restrictions on smoking locations may be helpful for persons attempting to give up smoking.[26] Taxation of cigarettes has been shown to be an effective deterrent in some population groups, particularly among younger men.[27] In Finland, cigarette taxes have been increased and a portion (0.5%) of funds are dedicated for the support of services to reduce the prevalence of smoking.[28] Similar policies are being explored in other states.[29]

Prevention Programs

There is growing consensus that it may be more cost-effective to prevent the onset of smoking among young people than to attempt to change the dependence behavior of adults in the habit of smoking. But smoking prevention has received far less scientific attention than cessation. This can be attributed to the complex processes involved in the onset of smoking,[30] to the extended time-span required for prevention studies, and to the overall tendency of the health sciences to focus more on individual-level clinical research than on primary prevention studies in which whole populations must be followed. Research on educational programs to prevent smoking has not been encouraging. Most programs to prevent smoking have concentrated on the dissemination of information about the harmful health consequences of smoking. However, many young people evidently find these consequences to be too remote to deter the use of cigarettes. Immediate factors, such as peer group norms, are the most influential determinants of smoking among young people and preventive anti-smoking programs must take such factors into account if they are to

successfully deter the onset of smoking.[31] Recently, a number of promising studies have demonstrated how social psychological determinants of smoking can be influenced in school-based programs.

1. Social-Psychological Studies

McAlister[32] assigned the 1978 seventh-grade cohorts in two similar suburban California towns to control (receiving "usual care" health education about harmful effects of smoking) or to a special "peer" prevention program to deter the onset of smoking. The special intervention program consisted of seven classroom hours distributed over the school year in which fifteen to seventeen year-old "peer leaders" led "Socratic" dialogues, role plays and simple contests which reinforced the twelve-year-old students attempts to avoid smoking and which promoted the social desirability of non-smoking. Role plays and simple contests were used to help students learn assertive ways of declining offers to smoke, emphasizing counter-arguments to the kinds of perceived social pressures from peers that may be associated with the onset of smoking.[33] Several follow-up sessions were conducted when the study cohort reached the eighth grade.

The findings showed that the special intervention may have had a preventive effect. Over two years of initial follow-up, the rate of self-reported smoking onset diverged sharply in the experimental and control schools, and differences were shown to persist over an additional year of follow-up.[34]

Growing out of the Finnish study presented in a preceding section, the North Karelia Youth Project was conducted in six rural communities of eastern Finland.[35] Two urban and two rural communities were assigned to "intensive" (direct experimenter contact) or "county-wide" (teacher-led) intervention programs in North Karelia.

The special intervention was implemented during the 7th and 8th grade years in the schools of the North Karelia study communities. It consisted of ten hours of instruction in the "intensive" schools and five hours in the "county-wide" program. The methods were based on those employed by McAlister[36] as reported in the preceding study. "Peer leaders, students 1-2 years older than the subjects, were the primary agents used to deliver the anti-smoking message. The program used role play and other active learning techniques to teach skills for resisting the social and psychological pressures to smoke, and to reinforce negative attitudes toward smoking."

Results from the surveys revealed evidence of a preventive effect from the special intervention. Among boys, the follow-up rates of smoking were significantly lower in the four intervention schools (21-24%) than in the reference area communities (39%). Results for girls were less conclusive, but the overall difference between groups at follow-up was significant: 17% in intervention schools and 24% in control schools. Analysis of the serum thiocyanate samples showed that 2-3% students claiming to be

nonsmokers probably gave inaccurate self-reports, but the slight under-reporting was greater in the control schools—indicating that inference from the reported findings were not significantly threatened by self-report biases.

In a somewhat more rigorous study, Flay assigned a large number of schools in Canada, some randomly, to receive special interventions to serve as a control.[37] Short-term findings reveal indications of a preventive effect. In another study, Worden tracked changes in smoking rates in two towns receiving a mass media campaign and a high-intensity program of adult communication skills related to adolescent smoking prevention.[38] Over one year of follow-up onset rates were markedly greater among a set of comparison towns receiving only the media campaign and some low-intensity community intervention. Similar results have been reported by other investigators in Houston,[39] Minnesota,[40] and elsewhere. These studies have tended to show positive results for the non-traditional health education methods, particularly those using peer-teaching and role plays of "saying no", that is, resisting social pressures toward smoking.

2. Environmental Intervention

Although there are not sufficient studies to confirm the hypothesis, it is likely that young people not strongly dependent on tobacco are most sensitive to the various "environmental" policy options for reduction of smoking. For example, the price elasticity of decisions to smoke regularly (for example, smoking status) is -1.4 for males aged 20-25, but lower for older men.[41] This indicates that a nine percent increase in the price of cigarettes might yield a fifteen percent decrease in the proportion of male smokers in the younger age group. Environmental changes related to the marketing, price or availability of cigarettes tend to be implemented in whole states or nations and are not amenable to controlled research.

Tobacco advertising is limited in various ways in some countries. In Finland and Norway all advertising has been eliminated. In the United States cigarette advertising is restricted to non-broadcast media. In many developing countries there is little or no control of tobacco marketing. Some distributors of tobacco define the objective of advertising as increasing "market share," that is, the proportion of existing smokers who use their product. In the United States, many advertisers explicitly design their appeals in ways which they claim limit the possibility that young, nonsmokers might be induced to take up the habit. However, by designating smoking as an adult behavior requiring maturity, cigarette manufacturers may be influencing adoption of the habit by immature young people eager for easy, external symbols of adulthood. It is interesting to speculate that advertising the harmful health effects of smoking may, in a similar way, influence a few young people to adopt the habit as a sign of their "toughness" or their feelings of hopelessness, futility or alienation from conventional norms. The relative lack of scientific research on environmental intervention should not deter policy-makers from the pursuit of bold strategies to contain the smoking problem.

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Legislative Action to Control Smoking—Accomplishments and Challenges

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Introduction

The effort to curb the world-wide smoking epidemic has led to anti-smoking legislation in nearly 70 countries.[2] These laws vary in rigor and scope. Some are stringent, others exert moderate controls, and still others impose only weak restrictions. The laws also differ in comprehensiveness. Some are categorical laws, regulating one or more specific aspects of tobacco promotion and use. Some provide a range of controls constituting an integrated anti-smoking policy of the government.

Despite these variations, experience with legislation to control smoking in the last decade has made several things clear:

1. Legislation, rather than voluntary measures, is necessary and feasible.
2. More and more countries are enacting legislation.
3. Convincing evidence is already available that legislative controls contribute to a decline in smoking and thereafter to a decline in the smoking-related diseases.

This paper describes the various legislative policies that exist or that could be adopted; what they have accomplished; and what still must be done if the largest preventable cause of death and disability in the world—tobacco smoking—is to be combated. An estimated two million persons die annually from smoking-related diseases, and one-third of all cancers are due to smoking.[3] To conquer this modern scourge—as deadly as the plague in medieval times—requires action at the international, national, and sub-national levels of government, together with efforts of the voluntary sector.

Purposes of Legislation

Legislation is a powerful tool for closing the gap between scientific knowledge about tobacco and social policy. The principal purposes of legislation are:

1. To set forth governmental policy on production, promotion, and use of tobacco. By enacting smoking control legislation the government puts itself squarely on the side of health. Legislation is a response to the question, "If smoking is as dangerous as the scientists say, why doesn't the government do something about it?". Legislation serves the established role of government to protect the public health and welfare.
2. To encourage smokers to stop smoking and to dissuade potential smokers, particularly young people, from starting to smoke. Legislation can help high priority groups to stop smoking—women (among whom lung cancer has now passed breast cancer as the leading cause of cancer deaths in a number of states in the United States), pregnant women whose smoking may harm the fetus, families with young children who are adversely affected by tobacco smoke, persons with medical problems, and workers exposed to

industrial hazards. Preventing smoking by young people is important because the earlier one begins to smoke the greater the risk.

3. To protect the right of non-smokers to breathe clean air. Tobacco smoke has long been considered a public nuisance by non-smokers. Evidence on the dangers to health of passive smoking is now emerging.
4. To reduce to some extent the harmful substances in cigarettes. While no cigarette is a safe cigarette, legislation to regulate the maximum tar and nicotine content of cigarettes is important in developing countries where the assault of the tobacco industry has included marketing cigarettes with much higher levels than the same brands have in industrialized countries.[4]
5. To contribute to the development of a social climate in which smoking is unacceptable. For example, control of advertising combats the message of the tobacco industry that smoking is not only acceptable but also associated with success, pleasure, relaxation, and in its crudest form with femininity, virility, and sex. The World Health Organization Expert Committee on Smoking Control Strategies in Developing Countries pointed out that it is widely recognized that social acceptability will be the battleground on which the case for non-smoking will be decided.[5]
6. To provide the basis for allocating resources to support effective programs to combat smoking. Legislation can authorize funding for health education, smoking cessation programs, implementation of restrictive measures, and evaluation of anti-smoking strategies.

Powerful evidence demonstrates the absolute necessity for legislation if smoking and the smoking-related diseases are to be reduced. We have only to compare Norway, which has strong legislation, with the United Kingdom, which still relies on a voluntary agreement with the industry, despite repeated pleas by the Royal College of Physicians of London for legislative controls. Per capita tobacco consumption in Britain today corresponds with the high per capita Norwegian consumption of 30 years ago. With Norway's marked decline in tobacco consumption in the 1970s and 1980s, its lung cancer rate (in males 60-69) is now one-third of the British rate.[6] It is small wonder that the World Health Organization Expert Committee on Smoking Control Strategies in Developing Countries concluded:

> *"It may be tempting to try introducing smoking control programs without a legislative component, in the hope that relatively inoffensive activity of this nature will placate those concerned with public health, while generating no real opposition from cigarette manufacturers. This approach, however, is not likely to succeed. A genuine broadly defined education program, aimed at reducing smoking must be complemented by legislation and restrictive measures..."*[7]

Types of Legislation

Two broad categories of legislation have been used to control smoking. One type seeks to bring about changes in the production, manufacture, promotion, and sale of tobacco. The other is designed to achieve changes in practices among smokers. It is useful, however, to examine more specific kinds of legislation because, as the World Health Organization Expert Committee on Smoking Control Strategies in Developing Countries points out, the priority given to different kinds of legislation may vary from country to country, depending on local circumstances, legislative codes, and political realities. Therefore, ten kinds of legislation will be analyzed here. The first six kinds come under the rubric of control of production, manufacture, promotion, and sale of tobacco, and the remaining four under the rubric of change in smoking practices.

1. Control of Advertising and Sales Promotion

The enormous expenditures of the tobacco companies—US $1.8 billion in 1978 rising to more than $2 billion in 1980—are designed to lure consumers to their product.[8] These figures do not include the cost of indirect advertising through sponsorship of sports and cultural events by the tobacco companies. In the United States alone, the cigarette industry spends at least $500,000,000 annually on advertising in newspapers, magazines, and on billboards, where it is the leading advertiser.[9] In Malaysia, the tobacco companies, mainly British American Tobacco and Rothman's spent approximately $5,000,000 in 1977 to promote smoking.[10] In Kenya, British American Tobacco has conducted an intense advertising campaign in the rural areas by means of prominent and colorful billboard advertisements throughout the countryside.[11] One particularly insidious billboard in Kenya plays on national pride by depicting elephants, tigers, and lions free in the forest with three packages of 555 cigarettes and the legend, "555 Stand out for Taste". Needless to add, there is no health warning.

The cynical contention of the industry is that advertising is designed only to affect choice of brand, not the decision to smoke, and that advertising is necessary to promote low-tar and low-nicotine cigarettes. Neither contention justifies advertising. The falsity of the first contention is revealed by the fact that even where there is no competing brand, the industry spends large sums to promote its product. The second contention—that advertising is designed to promote less harmful cigarettes—is specious, in view of the findings that tobacco from low-yield cigarettes does not contain less nicotine than tobacco from higher-yield cigarettes and that smokers of low-yield cigarettes do not consume less nicotine than smokers of higher yield cigarettes.[12] These findings led Dr. Claude Lenfant of the National Heart, Lung and Blood Institute of the United States to conclude that "despite the seductive advertisements, there is no less hazardous, safer cigarette".[13]

Reflecting the industry's use of advertising to maintain and extend smoking, not merely to affect choice of brand, is the brazen advertising of

cigarettes directed at women, in whom the first signs of an epidemic of smoking-related disease are now appearing in the United States.[14] The tobacco industry has stated publicly that women are the largest opportunity for the cigarette market.[15] In pursuit of this market, the industry advertises heavily in women's magazines ('Good Housekeeping' is the only woman's magazine in the United States that does not accept cigarette advertising), and thus it is not surprising that these magazines publish little on smoking and health, despite their extensive coverage of diet, exercise, and other aspects of health.[16]

In view of the power and pervasiveness of cigarette advertising, it is understandable that legislation to control advertising is the leading kind of legislative control on smoking. Among the 64 countries known to have national legislation to restrict smoking in 1982, 54 had enacted controls on advertising.[17]

Examples of Legislation

But controls on what Sir George Godber termed "commercial promotion of anti-health"[18] may be of varying degrees of stringency. Total bans on advertising have been enacted by a number of countries—Mozambique and Senegal in Africa; Jordan and Sudan in the Eastern Mediterranean Region of the World Health Organization; in Europe in all the socialist countries of eastern Europe, Spain and Portugal, several Scandinavian countries (Finland, Iceland, and Norway); and French Polynesia and Singapore in the Western Pacific.

Two examples of laws providing for a total ban on advertising of tobacco may be cited. In 1970, Singapore prohibited all advertising of cigarettes, cigars, or any other form of tobacco and defined "advertisement" in the broadest terms to include notices, circulars, pamphlets, brochures, programs, price lists, labels, wrappers, posters, placards or other documents on any wall or billboard, as well as any means of producing sound or light, whether for aural or visual reception or both. The only exception consists of certain advertisements in foreign publications, which may not be distributed together with newspapers published in Singapore.[19]

In 1984 Iceland passed new legislation on prevention of the use of tobacco. Section 7 prohibits any kind of advertising of tobacco and smokers' requisites, except for advertisements in foreign publications in which the main object is not to advertise tobacco. "Advertisement" is defined to include any kind of public announcement, imitations of tobacco products, signs and similar equipment, window displays, and the use of tobacco brand names and distinguishing marks. Indirect advertising is also prohibited. That is, it is forbidden to show consumption of any kind, display tobacco or smokers' requisites in advertisements or information on other kinds of goods or services.[20]

Strong partial bans have been enacted in Bolivia and Canada in the Region of the Americas; in Cyprus and Egypt in the Eastern Mediterranean; in a number of European countries—Belgium, France, Ireland, Sweden; and in Australia and New Zealand in the Western Pacific.

Examples of strong partial bans are the laws of France, Egypt, Sweden, and Bolivia. In 1976 France prohibited advertising of tobacco and tobacco products by radio, television, recordings, or other public announcements; in places of entertainment and other public places; and by means of posters, billboards, leaflets, or illuminated or other signs. Indirect advertising is also prohibited. Consumer goods distributed free or for payment may not bear the name of tobacco products, and free samples may not be distributed for publicity purposes. Tobacco manufacturers and dealers may not sponsor sports events or display the name, brand, or advertising symbol of any product during a sports event, except for motor car racing. The industry takes full advantage of this loophole at motor car races, which are carried on television and therefore have impact on a much wider audience than those who are spectators at motor car racing. Advertising in newspapers is restricted to advertisements appropriately called "tombstone" ads and carrying only the name and address of the manufacturer and distributor but no illustration or photograph except that of the product, its packaging, and its symbol.[21]

The 1981 law of Egypt prohibits all advertising or promotion of the sale of cigarettes or other tobacco products by state agencies, public corporate bodies, public sector units, cinemas, theaters, and sports clubs. It limits advertisements for cigarettes and tobacco products to the shape, contents, and price of the package and requires the warning "Smoking is very harmful to health," to be displayed conspicuously on all advertisements.[22]

In Sweden, advertising of tobacco is permitted only in newspapers and certain periodicals, not in publications directed to people under 20 nor on the sports pages of daily newspapers. There is no commercial advertising on Swedish radio or television. Printed advertising may not be "intrusive or proselytizing", and it must contain one of the 16 health warnings required on cigarette packages plus an indication of tar, nicotine, and carbon monoxide contents. The advertisements are restricted in size and as to text and pictorial material (no human beings or beautiful scenery may be depicted). Free samples, trading stamps, and combination offers of tobacco with other products are prohibited.[23]

In 1978, Bolivia enacted a new Health Code which prohibits advertising that encourages tobacco consumption on grounds of well-being or health as well as the use of children or adolescents in advertisements or the association of tobacco in advertisements with sporting, domestic, or occupational situations.[24]

A number of countries have moderate partial bans on advertising of one kind or another. These laws generally ban advertising on radio and television, may require a health warning, may restrict sponsorship of

sports events, may prohibit the association of tobacco with healthful activities or successful achievements. The difficulty with this limited type of restriction is that when one form of advertising is banned the industry turns to other forms of promotion.

Conclusions on Advertising Restrictions

Experience with different types of legislation restricting advertising leads to several conclusions:

1. Legislation is essential. Voluntary agreements with the industry, as in the United Kingdom and New Zealand, fail to restrict the promotion of cigarettes. In the United Kingdom, the industry's extensive sponsorship of sports and cultural events—and thus promotion of cigarettes—led the Royal College of Physicians of London in 1977 to issue an urgent call to substitute legislation for the voluntary agreement with the industry.[25] This call was repeated even more urgently in 1983.[26]
2. A total ban on advertising is unequivocal and more readily enforced than a partial ban. Even a strong partial ban is subject to evasion by the industry. In France the spirit of the law of 1976 was that advertising, to the extent allowed, should be informative only and should not promote consumption of tobacco. The tobacco companies, however, exploited loopholes in the law not only with respect to advertising in connection with motor car racing, as mentioned, but also in connection with advertising in the press. One poster, purporting to be for cigarette lighters or matches, created an intentional confusion with brands of cigarettes by showing the images of the cigarettes on the lighters. In a lawsuit brought to stop this practice, the court held in June 1983, and was sustained on appeal in January 1984, that such advertising was a breach of the law because it conveyed to the viewer "at first sight" the well-known brand of cigarettes, and it is irrelevant that the word "Lighters" appeared under the brand name, since:

   > *"slight differences between the object, which is in fact a lighter, and a cigarette packet.... cannot be noticed 'at first sight' and, for their perception, require a person to stop and examine the poster, which the average observer does not do;...."*[27]

   Think of the time and money this lawsuit cost—time and money that could have been more advantageously spent in health education on smoking if the law had banned all advertising of tobacco and tobacco products. In fact, the Secretary-General of the National Anti-smoking Committee of France, quoted above, states:

". . . the Law appears to be inadequate; it should be rendered more stringent, in particular by prohibiting in advertising the reproduction of anything other than the actual product. The Committee also urges that the exceptions permitted in the case of advertising at motor sports events should be abolished."

3. Fortunately, the modern trend is toward enacting strong restrictions on advertising of tobacco. Since 31 January 1982, two countries enacting restrictions on tobacco advertising for the first time adopted a total ban—French Polynesia[28] and Sudan.[29] Two countries amending earlier legislation to provide more stringent controls—Iceland,[30] and Spain[31]—also enacted a total ban on advertising. Portugal strengthened its restrictions on advertising by prohibiting advertising in the national media and prohibiting any association of the name, brand, or symbol of a tobacco product with consumer goods not directly connected with the use of tobacco.[32] Three countries enacting new anti-smoking legislation in this period adopted strong partial bans—Hong Kong,[33] Israel,[34] and Senegal.[35] The legislation in Spain is interesting for its transitional provisions. It allows advertising commitments in effect at the time the legislation enters into force to be fulfilled for a maximum of two years following the effective date of the decree (three years for advertising of low-tar and low-nicotine products). It also requires the communications media to submit to the responsible government agency substantiated details of existing tobacco advertising commitments.

2. Requirements for Health Warnings and Statement of Tar and Nicotine Contents

Mandatory health warnings on cigarette packages are a form of health education to alert the public to the dangers of smoking. As of 31 January 1982, 34 countries are known to require such warnings by law, and four provided for them by voluntary agreements with the industry.[36] Since then, eight countries (Iceland, Kenya, Lebanon,[37] Pakistan,[38] Portugal, Senegal, Spain, and Sudan) have passed laws requiring a health warning, and one country (the Federal Republic of Germany)[39] has shifted from a voluntary agreement to legislation on this matter.

Most of the health warnings required are quite weak, stating merely, for example, as in Sudan, "Smoking is harmful to health", or in the Federal Republic of Germany, "The Federal Minister of Health: Smoking endangers your health".

The most important development concerning health warnings is the recognition by several countries of the effectiveness of the Swedish system of alternative or rotating warnings. These warnings contain strong, specific messages that capture the attention of the smoker, and they are changed

periodically so as not to become hackneyed. As the director to the Swedish Smoking and Health Association stated, the rotation system "evokes curiosity so that the notice is really read, not neglected".[40]

Finland, Ireland, and the United Kingdom have adopted rotating warnings. In 1984, Norway, the United States, and Iceland joined the ranks of countries requiring strong, specific rotating health warnings on cigarette packages.

Norway uses 12 rotating warnings that must appear on cigarette packages and must be spread equally over time, geographic location, and brands. Regulations prescribe the way in which the symbol, warning, and declaration of contents must be displayed on the package.[41] Examples of the new Norwegian warnings are:

Daily cigarette smoking is dangerous to health.
THE MORE YOU SMOKE, THE GREATER THE DANGER TO HEALTH
The Directorate of Health Services.

You who have been smoking for a long time:
IF YOU STOP SMOKING,
YOU REDUCE THE RISK OF SERIOUS ILLNESS.
The Directorate of Health Services

You who are young:
THE EARLIER YOU BEGIN TO SMOKE, THE GREATER THE RISK.
Directorate of Health Services

In the United States, the long efforts of the Federal Trade Commission and of one of its Commissioners, Michael Pertschuk, led finally to the passage by Congress of a law requiring four rotating warnings on cigarette packages and advertising.[42] The new warnings are:

SURGEON GENERAL'S WARNING: Smoking Causes Lung Cancer, Heart Disease, Emphysema, And May Complicated Pregnancy.

SURGEON GENERAL'S WARNING: Quitting Smoking Now Greatly Reduces Serious Risks to Your Health.

SURGEON GENERAL'S WARNING: Smoking by Pregnant Women May Result in Fetal Injury, Premature Birth, and Low Birth Weight.

SURGEON GENERAL'S WARNING: Cigarette Smoke Contains Carbon Monoxide.

Another form of information to consumers consists of statements of tar and nicotine contents on cigarette packages. As of 31 January 1982, 12 countries required a statement of tar or nicotine contents (8 by legislation and 4 by voluntary agreement with the industry). In the succeeding three years, six additional countries enacted such legislation—Kuwait, Norway, Portugal, Spain, Pakistan, and Hong Kong (see Appendix Table).

Statement of emission levels of tar, nicotine, and carbon monoxide (Finland requires statement of all three) is particularly important in developing countries, where cigarettes sold may yield much higher levels of tar and nicotine than cigarettes in industrialized countries. In Britain no popular cigarette contains more than 19 milligrams of tar, but in Thailand the average yield is 29.5 milligrams, and one brand on sale in the Philippines produces 71 milligrams.[43]

Labelling of harmful substances is important for several reasons. It provides information to the smoker that is not otherwise available. There is some evidence that low-tar and low-nicotine cigarettes reduce somewhat the risk to the smoker, even though the reduction by no means compares with the benefit of stopping smoking entirely. Smoking low-tar cigarettes is sometimes a step towards cessation, for low-tar cigarettes may be less addictive than cigarettes with high tar and nicotine contents.

Publicity of tar and nicotine contents has been criticized as lulling the public into a false sense of security and giving the industry an excuse for promoting smoking in their efforts to launch new low-tar brands. Gray and Daube in their seminal book, *Guidelines for Smoking Control*, point out, however, that governments can "ensure reduction of tar yields through legislation without publicity on 'safer smoking'."[44]

Conclusions on Health Warnings and Information on Contents

Experience with health warnings and information on harmful substances on cigarette packages leads to several conclusions:

1. Evaluations of the single warning, "The Surgeon General has determined that cigarette smoking is harmful to health" and of the Swedish system of rotating warnings show the marked advantages of rotating warnings.[45] Seven countries are currently using rotating warnings.
2. In the array of messages conveyed by health warnings, it is important to include a statement that tobacco is addictive. This explains the difficulty in stopping smoking.
3. Where advertising is still allowed, health warnings should be required in conspicuous display on all advertising.
4. Legislation should require information on the contents of cigarettes on the cigarette package, including the levels of all harmful substances (tar and nicotine) and emissions (carbon monoxide). Labelling gives developing countries the opportunity to lower tar content by forbidding the importation of unlabeled high tar cigarettes.[46]
5. Where advertising is still allowed, a statement of tar, nicotine, and other harmful substances should be required on the advertisement. Moreover, no statement should "give any impression other than that all smoking is dangerous and should be avoided".[47]

3. Control of Harmful Substances

An analysis by Nigel Gray of Australia has shed new light on the debate as to whether low-tar, low-nicotine cigarettes provide any protection for the smoker.[48] Dr. Gray cites two recent studies that show that dose reduction by lowering tar or by lowering number of cigarettes smoked reduces relative risk, but not to the extent achieved by giving up smoking.[49] According to Wald, Doll, and Copeland some of the reduction in British cancer mortality may be attributed to the influence of low-tar cigarettes.[50] Gray concludes:

> "Although the desirable epidemiological comparisons can't be made I am firmly of the view that a market range of cigarettes between 5 and 15 mgs is considerably less noxious than one of 25-45 mgs. I further believe this should be our target. We are on the point of it in Australia, the Middle East, Egypt and Scandinavia. There is no valid reason for the continued sale of high tar cigarettes anywhere. How to achieve this?"[51]

Gray states that there are three ways to achieve low-tar cigarettes—through legislation, through voluntary agreement with the industry, and through increasing the tax on high-tar cigarettes. The effectiveness of legislation is illustrated by Egypt, where the maximum level for tar was set by law at 20 mg. One year after the legislation was enacted five major brands of cigarettes had reduced their tar content to levels ranging from 15.5 mg to 17.9 mg.[52]

Gray's well-reasoned analysis supports the need for achieving low-tar cigarettes everywhere. Britain has promoted low-tar cigarettes through differential taxes. Finland, Kuwait, and Egypt have enacted legislation setting maximum levels of noxious substances. The legislation of Hong Kong prescribes the tar group designations for cigarettes and requires the government chemist to determine the tar group to which each brand of cigarette belongs. The Customs and Excise Services has authority to take samples of cigarettes for analysis by the government chemist.[53] Legislation has the advantage of enabling countries to achieve a progressive reduction in these levels.

Conclusions on Controlling Harmful Substances

Analysis of experience with low-tar cigarettes has shown the positive benefits of legislation to control harmful substances. Several conclusions may be drawn:

1. Although the benefits of low-tar cigarettes do not compare with the benefits of stopping smoking, cigarettes with 5 to 15 mgs of tar are considerably less harmful than those with 25-45 mgs.
2. Legislation to set maximum levels of tar and nicotine is feasible and enforceable. The law should authorize the government to set

progressively lower maximum levels of harmful substances.

3. The technical problems involved in the task of controlling harmful substances are considerably aided by a program of the World Health Organization for co-operating with developing countries in testing cigarettes.[54]

4. Restrictions on Sales to Adults

Restrictions on places where cigarettes may be sold make a strong statement to the public with respect to a product that has been more widely available than any other product. Such laws thus contribute to the creation of a non-smoking environment.

Constraints on the sales of cigarettes are of two types. Prohibiting the sale of cigarettes in health institutions and government buildings expresses official policy of the government. Restricting or limiting the use of vending machines reduces the general availability of cigarettes and, most importantly, discourages sales to minors, as discussed below.

Only a handful of countries have enacted legislation of this type (see Appendix table). Cyprus was reportedly the first country to prohibit totally the use of cigarette vending machines.[55] Finland has restricted the use of vending machines to protect young people; the limitation of automatic vending machines to catering establishments where they are under constant supervision also makes cigarettes less available generally.[56] A 1983 law in Brazil in the state of Rio Grande do Sul (which, curiously, produces 70% of Brazil's tobacco) bans and penalizes the sale of cigarettes in any establishment subsidized by the government, including the Legislative Assembly.[57]

Conclusions on Restricting Sales to Adults

Experience with legislation restricting sales evokes the following conclusions:

1. There can be no justification for allowing sales in a hospital or health institution of a product proven to be so harmful to health.
2. Prohibiting sale of cigarettes in government buildings is feasible and has a strong educational impact.
3. Where sales to minors are illegal, young people obtain cigarettes from vending machines. Therefore legislation to prohibit cigarette vending machines is important to prevent smoking by young people.

5. Tax and Price Policies

The importance of tax and price policies is increasingly recognized as affecting consumption of tobacco. Recent studies have shown that price elasticity[58] affects the demand for cigarettes. Warner finds a price elasticity of demand for cigarettes for adults in the United States of -0.42, meaning that a 10% increase in price should lower the consumption of cigarettes by

4.2%.[59] For teenagers the price elasticity of demand is -1.4, meaning that a 10% increase in price will produce a 14% decrease in consumption. Thus, an increase in price affects the decision to smoke. Warner's calculations show that the 16 cent increase in cigarette taxes effective January 1, 1983 will have the following effects: 2.2 million adults will discontinue smoking and 1.2 million teenagers will choose not to smoke. A decrease in the cigarette tax from 16 cents to 8 cents means that 1.2 million people will remain smokers and more than 500,000 teenagers will choose to smoke, This is powerful evidence that increasing taxes on cigarettes will have both health and fiscal benefits.

Warner explains that this is not simply a theory. In 1983 when the federal excise tax on cigarettes was raised in the United States, there was a decrease in consumption of 4%. One may also cite experience in the United Kingdom where five successive tax increases from 1974 to 1978 were associated with a 9% reduction in cigarette sales and hastened the move away from high-tar cigarettes.[60] In 1981 the price of cigarettes was increased in Brazil, and consumption decreased by 6%.[61] In 1980 cigarette sales in Brazil were 141 billion; in 1981 they had fallen by 10 billion to 131 billion.

In addition to general tax increases, differential taxation for cigarettes with different yields of tar discourages consumption of high-tar cigarettes. Between 1978 and 1981, cigarettes yielding more than 19 milligrams of tar were subject to a supplementary tax in the United Kingdom; within three months of its introduction, the market share of such cigarettes dropped from 15% to 3%.[62]

Still another type of fiscal provision is that pioneered by Finland, which requires that 0.5% of tobacco tax revenue must be allocated in the national budget for health education, research, and evaluation in smoking control.[63] Iceland in its 1984 law provides that of the revenue from tobacco sales, 2% shall be spent on anti-smoking activities.[64] French Polynesia requires that not less than 1% of the revenue from tobacco taxes must be used for a health education campaign through the press, posters, etc.[65]

Other countries that have increased taxes on cigarettes are Zaire and France. In 1983, Zaire tripled its taxes on cigarettes, which had also been raised significantly in 1981 and 1982.[66] In 1983 also, France, which has had strong legislation to control smoking since 1977, enacted legislation establishing a levy on tobacco and alcoholic beverages the proceeds of which are to accrue to the National Health Insurance Fund because of the health hazards entailed by even moderate use of these products.[67]

One of the objections raised to increasing taxes on cigarettes and consequently their price is that higher taxes are regressive and impinge unfairly on the poor. Warner replies that, in the case of cigarette taxes, higher taxes help the poor because smokers who are poor are more responsive to changes in price than higher-income smokers. Moreover,

many low-income smokers are teenagers who are only temporarily poor, and they are benefited by not smoking. Warner concludes: The more you tax, the more you discourage smoking.[68]

6. Economic Strategies

Probably the greatest challenge that lies ahead if the world tragedy wrought by smoking is to be stopped will not be achieved by legislation but by economic strategies to replace the current reliance on tobacco production with other crops. As legislation and education are decreasing consumption of cigarettes in the industrialized countries, the tobacco industry is intensifying its advertising and marketing in the developing countries.[69]

Tobacco is a cash crop that provides a high return on investment. It is not subject to the fluctuation of world commodity prices, as are cotton, cocoa, coffee, tea, sugar, and groundnuts. It provides income to tobacco farmers, employment to factory workers in tobacco manufacturing, tax revenue to governments, and, above all, foreign exchange from export of leaf tobacco and cigarettes—essential to the developing countries for imported tools, machinery, and food.

Acting on repeated resolutions of the World Health Assembly urging the Food and Agriculture Organization to study the feasibility of substituting other crops for tobacco, the Food and Agriculture Organization Commodities Division in 1982 issued a report. It concluded that tobacco growing has the advantages of giving large-scale rural employment, being one of the most remunerative cash crops, and constituting an important source of foreign exchange for exporting countries. In developing countries where manual methods of producing cigarettes are used, tobacco manufacturing creates jobs with wages that compare favorably with those paid by other industries employing workers with similar skills. Finally, tobacco provides an easily tapped source of tax revenue. The Food and Agriculture Organization report concluded:

> *"In view of these factors, farmers continue to have strong incentives to produce tobacco, and governments to encourage its cultivation and manufacture[70]."*

The Example of Tanzania

Let us examine the way in which one African government views the economic benefits of tobacco and seeks to increase its production.

> *"Tobacco is one of Tanzania's leading foreign exchange earners, ranking seventh after tea and robust coffee. In 1981/82 it brought in almost US$20 million."*

So opens the analysis of the Tanzania Marketing Development Bureau of price policy for tobacco in 1983.[71]

Tobacco is mainly a smallholder produced crop in Tanzania, although large-scale farmers in the Iringa region produce about 10% of total national production. Tobacco is a labor-intensive crop and creates income for a large number of small farmers. The Tobacco Authority of Tanzania, a corporate parastatal agency, has authority over inputs to production (fertilizer, seed bed packs, packing materials, firewood, barn flues, thermometers, and empty drums), loans, and technical expertise and is the sole marketing agent from the time the farmer sells his tobacco, to the delivery of the processed tobacco to the customer. There are two main purchasers of Tanzania's tobacco for export. The principal local purchaser of tobacco leaf from the Authority is the Tanzania Cigarette Company, Ltd. in Dar es Salaam. The only other cigarette manufacturer is in Zanzibar. No imports of tobacco leaf are allowed in Tanzania.

Despite the importance of tobacco to Tanzania's economy, there are a number of technical and economic disadvantages to tobacco production, to say nothing of the disadvantages to the health of the people. Production of tobacco has declined by 21% since 1979/80 despite price increases and subsidies. The area under tobacco has been shrinking, and yields per hectare have been decreasing. The average yield of 622 kg/ha is considered low by world standards. As a result, a 40% price increase (a 5% real price increase) for producers of all types of tobacco has been recommended, but the Marketing Development Bureau anticipates that these increases will have little effect on declining production. Moreover, associated with the increase in producer prices, a subsidy of 187 million shillings will be required in 1984/85.

Tobacco requires a heavy investment in production, handling, and processing, which Tanzania has been able to moderate by $19.3 million in credits from the International Development Agency. The World Bank has financed three major projects in Tanzania (CR 217- Flue Cured Tobacco Production Project; CR 658- Tobacco Processing Project; and CR 802- Tobacco Handling Project), but these projects were reported to be relatively unsuccessful because of lack of managerial talents.

Not only are production incentives needed, but there must be financial security for the producer and availability of inputs. Tobacco uses more inputs than any other crop grown in Tanzania. For example, tobacco cannot be produced without fertilizer, and about 25% of all fertilizer distributed in the country is used by the tobacco industry. All other inputs mentioned earlier are expensive and require farmers to negotiate loans from the Tanzania Rural Development Bank.

Moreover, tobacco is a very time-consuming crop, requiring great attention to detail, considerable experience, and real dedication by the grower. "Proper cultivation methods must be adhered to, the schedule of input requirements must be followed strictly, and the curing process must be carried out with scientific precision ...." In Tanzania, "where the infrastructure to provide the basic requirements for inputs has shown itself to be faulty, following such a rigorous program becomes impossible".[72]

Returns to producers per labor day from tobacco production have been found to be below Sh17.70. The return per labor day dropped 15% from the previous year due to inflation and costs of input. Labor inputs per hectare of tobacco are high in comparison with other crops and require a higher level of skill. Therefore, extension personnel, research and development programs on growing methods, fertilizer requirements, curing methods, and energy are all needed.

Energy problems are serious. As Mike Muller has said, "You lose not only your health but your land from tobacco".[73] The Marketing Development Bureau of Tanzania reports that firewood has become more and more a critical constraint for tobacco growers.[74] Approximately one hectare of forest is required to cure one hectare of tobacco. Tanzania has about 11.2 million hectares of Miombo woodlands, which are used by 90% of the people for fuel for cooking and heating. Tobacco growers relied on this woodland because it was plentiful and cheap. But as production increased in the 1970s all convenient forest areas close to the tobacco farms were exhausted, and supplies could be found only farther and farther away from the small growers' farms. It has become difficult and costly to obtain firewood for curing tobacco.

The impact of tobacco production on the forests around the farms is characteristic not solely of Tanzania. The same destruction of forests is reported in Brazil:

> *"It has been estimated that around 150 large trees are needed to cure just over one acre of tobacco.... A quick calculation shows why the horizons are bare: the average size of the tobacco allotment in Rio Grande Do Sul is about four acres. Therefore, in one year, the area's 100,000 tobacco farmers need the wood of 60 million trees—or nearly 1.5 million acres of forest. The problem is not unique to Brazil. Huge areas of the Third World where tobacco is grown have been stripped of their forests and woods to provide energy to cure tobacco.... The effect on the ecological balance, especially in drier areas, can be disastrous. Water tables are lowered, springs may dry up, and wells are drained. Deserts may be created where forests once stood.*[75]

Turning back to the situation in Tanzania, we find no mention in the analysis of the Marketing Development Bureau of the health hazards of smoking, although the doctors working in preventive services in the Ministry of Health are deeply concerned about the future emergence of lung cancer and smoking-related diseases. With an average life expectancy at birth of 47 years, however, the problem is not immediate. Most people don't live long enough to get lung cancer.[76] There is no legislation to restrict smoking; fortunately the domestic price for cigarettes is high, and there are often shortages in the supply.

What about competing crops and the possibility of crop substitution? The Marketing Development Bureau names the following crops that compete with tobacco: groundnuts, maize, honey/beeswax, beans, millet,

cassava, game hunting, fishing, sunflower, and pyrethrum. The major competitor is maize. Comparison of the relative returns to labor from tobacco and maize show prices paid to producers much higher for tobacco than for maize. As for returns to labor from the two crops, in the past returns to labor from maize were lower but only slightly lower in 1981/82 and actually higher for maize than for tobacco in 1983/84.

The small size of Tanzania's tobacco crop, the high cost of price supports, subsidies, inputs and extension services, the destruction that tobacco curing wreaks on the forests, and the priority the government accords to the health of the Tanzanian people, as evidenced by its well organized health services throughout the country, make Tanzania a suitable testing ground for a demonstration of the feasibility of crop substitution for tobacco. As pointed out by an official of the Food and Agriculture Organization, it would be necessary to assign an agronomist to investigate what crop could be produced that would yield a foreign exchange similar to that of tobacco.[77] One suggestion that emerged from the discussion of a Tanzanian health official with a consultant to the World Health Organization was the possibility of increasing the production of maize (which can be grown in the same areas where tobacco is grown) and producing corn oil for export from the increased crop. If the Food and Agriculture Organization and the World Bank should see fit to support such a project, it could have world-wide significance. It is not enough to show that certain fruit and vegetable crops are more lucrative than tobacco; this has been done.[78] Rather, the reality of the health and economic value of crop substitution must be demonstrated in practice. Such a demonstration could be a landmark in the fight to save the developing world from the epidemic of smoking diseases and unnecessary deaths that has gripped the industrialized countries.

We turn now to legislation designed to change practices among smokers. These kinds of legislation aim to achieve a non-smoking environment.

7. Restrictions on Smoking in Public Places

The claims of non-smokers to a smoke-free environment were formerly justified on the grounds that smoking creates a public nuisance and is positively harmful to persons sensitive to smoke. New studies in Japan, the United States, Greece, and the Republic of Korea have presented evidence on the wider dangers of passive smoking.[79] In the United States, the non-smoking wives of smokers were shown to have a risk of lung cancer 3.5 times as great as the non-smoking wives of non-smokers.[80] Control of smoking in public places is therefore justified not only on aesthetic grounds but on health grounds.

From 1982 to 1985 the number of countries restricting smoking in public places has risen from 31 to 37, not including state and local jurisdictions that have enacted such legislation. As with this type of legislation enacted in the past, the new laws vary in the range of public places where

smoking is restricted. Hong Kong prohibits smoking only in public elevators and public land vehicles with one deck or on the lower deck of land vehicles with more than one deck. In cinemas, theaters, concert halls, and public service transport other than those mentioned, not less than 50% of each class of the seating accommodations must be designated as a no-smoking area.[81]

In other legislation smoking is banned in a wide range of public places, as follows:

Brazil (Rio Grande do Sul)—in closed areas of public educational establishments, meeting halls, lectures, entertainment, museums, libraries, public health establishments, gymnasia and other closed areas for sports, and inter-city transport vehicles.[82]

Iceland—in institutions and firms accessible to the public (except restaurants and places of entertainment where non-smoking tables must be reserved) and is specifically prohibited in primary schools, day nurseries, and buildings primarily for social and leisure activities for children and adolescents under the age of 16; in health centers and hospitals (except where it does not inconvenience non-smokers); in the passenger section of public transport.[83]

Israel—in closed halls for entertainment or public gatherings, hospitals and clinics (except for a place allotted by the hospital where smoking is allowed), the public section of pharmacies, public library reading rooms, educational institutions, elevators, buses, taxis, and minibuses.[84]

Portugal—in health-care premises, places frequented by young people, schools, colleges, universities, and roofed premises devoted to sports or entertainment.[85]

Spain—in all urban and inter-urban public transport, entire carriages or compartments of railway vehicles, public rooms on board marine vessels, in health and educational establishments (with areas in which smoking is permitted duly signposted).[86]

Sudan—in enclosed public places, including vehicles, indoor cinemas, and any other places frequented by the public.[87]

These laws have the advantage of being specific and clear. One should note once again, however, the approach of Finland, where all smoking in public places is prohibited unless specifically allowed.[88] Thus far, Finland is unique in enacting and implementing such an innovative approach.

Conclusions on Control of Smoking in Public Places

Experience with control of smoking in public places indicates:

1. Implementation of such laws at the outset may present problems. In Egypt it proved difficult to implement the prohibition on smoking in public places, particularly in crowded buses and certain public

offices[89]. Hong Kong had a similar experience in enforcing its law on buses. The support of the media (television, radio, and newspapers) in explaining the law to the public is helpful, and gradually the public comes to accept non-smoking in public places as the norm.

2. It is particularly important, as the World Health Organization Expert Committee on Smoking Control Strategies in Developing Countries points out, that hospitals, health care institutions, and official health agencies set an example and that smoking be banned in these places.
3. In drafting and enacting this type of legislation, it is advisable to include as wide a range of public places as possible.

8. Restrictions on Smoking in the Workplace

It is increasingly recognized that the rights of non-smokers extend to the workplace, where people spend much more time than they do in meeting rooms and public transportation. Laws prohibiting smoking in health institutions and schools restrict smoking in the workplaces. Smoking is particularly dangerous where it accentuates the toxic effects of hazardous materials. In Norway persons who smoke may not be assigned to work in places where they may be exposed to asbestos dust.[90]

Despite its importance, legislation restricting smoking in the workplace has been difficult to enact. Rather than specifying the conditions under which smoking is prohibited or permitted in different types of work establishments, it seems preferable to establish an administrative mechanism for regulating smoking in the workplace.

Thus, the law in Spain specifies that smoking areas in indoor public establishments and large commercial premises shall be established provided that this is compatible with their dimensions, characteristics, and intended purposes and that smoking is not otherwise prohibited.[91] A commission with representatives of the Ministries of Finance, Health and Consumer Affairs, and Economic Affairs and Trade shall be set up for this purpose. The new Icelandic law provides that smoking in places of work other than those specified (institutions and firms accessible to the public, schools, day nurseries, buildings for social activities of children and young people, and hospitals and health centers) is subject to further regulations to be laid down in cooperation with the Administration of Occupational Safety and Health.[92]

In the United States, municipal ordinances in a number of cities in California have been successful in regulating smoking in offices and other workplaces. The Smoking Pollution Control Ordinance of San Francisco requires employers to adopt a written smoking policy to accommodate the wishes of smokers and non-smokers among their office employees. If no agreement is reached, the non-smokers' wishes must prevail. Employers failing to comply with this ordinance may be fined up to $500 a day.[93]

The Los Angeles ordinance requires employers with five or more employees to make reasonable efforts to accommodate the desires of non-smokers for a smoke-free environment and prohibits retaliation against employees who seek to enforce the ordinance.[94]

Those parts of restaurants, bars, and hotels where food is served are exempt. The proposed provision for fines was deleted.

Conclusions on Control of Smoking in the Work place

Experience with this type of legislation indicates:

1. There is a need to explore with employers and trade unions the type of legislation that is feasible and appropriate.
2. White collar workers seem more amenable to regulation of smoking in the workplace than blue collar workers. Increased health education on smoking should be incorporated in national health programs.
3. The success with control by local ordinance of smoking in the workplace in the United States suggests the viability of this approach.

9. Preventing Young People from Smoking

Several kinds of legislation are designed to prevent young people from smoking—prohibiting sales to minors, prohibiting children and adolescents from smoking in public, restricting sales of cigarettes from vending machines (discussed above in connection with sales to adults), and prohibiting smoking in schools and other places frequented by young people (discussed in connection with restricting smoking in public places).

The legislation of Iceland, enacted in 1984, is a model of clarity and simplicity. The Icelandic law provides that: tobacco may not be sold to persons under 16 years of age; all sale of tobacco from automatic vending machines is prohibited; and tobacco may not be sold in schools or institutions for children and young people.[95]

Conclusions on Preventing Smoking by Young People

Experience with legislation to prevent young people from smoking suggests:

1. The most important objective is to create a non-smoking environment, a society in which smoking is not acceptable and not permitted.
2. As part of the effort to create a non-smoking society, legislation designed specifically for the protection of children and young people conveys a strong message from the government.
3. Banning sales of cigarettes from vending machines is important because it makes cigarettes less widely available, especially to young people where sales to minors are a criminal offense.

10. Mandating Health Education

The World Health Organization Expert Committee on Smoking Control Strategies in Developing Countries stressed that no legislation may be expected to succeed without educational activity, and it urged making education mandatory before launching legislation.[96] Countries that have achieved a significant reduction in smoking, for example, Sweden and Norway, have introduced strong educational programs.

There is no gainsaying the importance of eliminating advertising of cigarettes and thus freeing the people from the pressure to smoke. But prohibition of advertising needs to be accompanied by effective anti-smoking messages to the public. In the United States, anti-smoking commercials carried on prime time television in 1968-70 reduced smoking prevalence. When Congress prohibited cigarette advertising on radio and television, the media were no longer required to grant "equal time" under the fairness doctrine of the Federal Communications Commission for anti-smoking messages; cigarette sales increased by 2 1/2% per year.[97]

An evaluation of the impact of the anti-smoking legislation in France notes an appreciable fall in the percentage of smokers since 1976 and attributes the decline primarily to "information campaigns in the media which have been decisive in bringing about new attitudes and behavior in relation to consumption of tobacco."[98]

Impact of Legislation to Control Smoking

Evaluation of the effects of specific types of legislation is difficult because many factors are involved in the use of tobacco. In a few instances researchers have been successful in demonstrating the decline in smoking associated with specific interventions, such as Warner's finding of a decline in smoking associated with the airing of anti-smoking messages in the United States, and the findings in the United States and the United Kingdom of a decline in smoking associated with price increases, both discussed earlier.

While evidence of the effects of specific legislative interventions is limited at present, the effect of legislative restrictions generally is powerfully demonstrated in the dramatic decline in smoking that has occurred in industrialized countries where anti-smoking legislation has been combined with education. The most powerful evidence comes from the Scandinavian countries where comprehensive anti-smoking programs have been enacted and implemented, but even in countries with more limited legislation and programs—Canada, France, and the United States—there has been a marked decline in smoking among young people.

In Sweden, where strong health warnings on tobacco were introduced in 1975, the percentage of daily smokers has been declining steadily from 1976, when 43% of the population were daily smokers, to 1980, when only 31% of the population were daily smokers. Commenting on the increasing percentages of persons who stopped smoking, the Director General of the National Smoking and Health Association of Sweden ascribed this to "a

snowball effect arising when more and more people find themselves surrounded by more and more friends and companions who have stopped."[99] Thus, legislation contributing to the development of a non-smoking environment is influential.

Most important in Sweden is the decline in smoking among young people. Among 13-year old boys, the percentage who stated that they smoke declined from 14% in 1971 to 5% in 1980. For 13-year old girls the decline was from 16% in 1971 to 6% in 1980. Among 16-year old boys, the percentage who stated that they smoked was 41% in 1971 and 21% in 1980. Among 16-year old girls the decline was from 47% in 1971 to 33% in 1980.[100]

In Norway, the National Council on Smoking and Health has reported trends in tobacco consumption and demonstrated the decline following the decision of the Norwegian Parliament to adopt legislation in 1970 and again in 1973 when the Tobacco Act entered into force.[101] When the Tobacco Act became effective, the percentage of male daily smokers was 52%. In three months it dropped to 49%, and by 1982 it had dropped to 40%. The percentage of female daily smokers was 32% in 1973 and increased only to 34% by 1982, showing that the strong increase in smoking by women in previous years had been arrested.

Among school pupils aged 13-15 years, smoking increased for both boys and girls from 1957 to 1975 and has declined since that date. In Norway, among persons aged 16-20 years, 40% of the boys and 41% of the girls smoked daily in 1974. By 1983, the figures were 21% for boys and 26% for girls. The director of the Norwegian National Council on Smoking and Health stated, "If this decline continues at the same speed in the future, young people in Norway will be smoke-free by the year 2000. This shows that a government program works".[102]

The Norwegian National Council on Smoking and Health ascribes this positive trend to information, activities, and education on smoking and health in the schools, to legislation removing advertising which had created pressure on young people to smoke, to the special attention paid to smoking by girls, and to the change in general attitudes towards smoking and smoking behavior among adults and young people. Smoking is no longer considered normal social behavior and a sign of maturity in Norway.

One may also view the effect of legislation as part of an anti-smoking program in another way, that is, in terms of the trend if the legislative intervention had not occurred. According to Dr. Kjell Bjartveit, the Director of the Norwegian Council on Smoking and Health, if the upward trend in tobacco consumption of the 1950s and 1960s had continued into the 1970s and 1980s, Norway would currently have a per capita consumption 30% higher than it is.[103] As mentioned earlier, the lung cancer death rate among British males aged 60-69 is more than three times that of the Norwegian, providing a striking comparison between

Norway with strong legislation and the United Kingdom having only a voluntary agreement with the industry.[104]

In countries where more limited legislation has been enacted than in the Scandinavian countries and where the anti-smoking activities are less pervasive, there has nevertheless been a decline in smoking. In Canada, tobacco consumption for 1983 has decreased significantly, probably reflecting the substantial price increases for cigarettes in 1981-1982.[105]

In France, the percentage of smokers has declined from 44% in 1976 to 37% in 1982.[106] The decline among French men was from 60% to 49%; among French women from 31% to 26%.

In the United States, per capita cigarette consumption for individuals 18 years or older decreased at an annual rate of 0.6% from 1963 to 1978, and the proportion of smokers declined at an annual rate of 1.6% from 1965 to 1980 — 42% to 33%.[107] Sixty-seven percent of the U.S. population are now non-smokers. Among young people the decline in smoking is less marked than in the Scandinavian countries. The percentage of 17-18 year old boys who smoke declined from 30% in 1968 to 20% in 1979. Among 17-18 year old girls an initial increase from 18% in 1968 to 25% in 1977-78 seems to have leveled of by 1979.[108]

The strongest evidence of the efficacy of legislation is the decline in cigarette consumption in countries that have implemented restrictive legislation and potentiated it with effective educational activities and smoking control programs. The World Health Organization Expert Committee on Smoking Control Strategies in Developing Countries concluded:

> *"Few would imagine that any single measure acceptable to the community could of itself succeed in bringing about a lasting decline in smoking. Yet there is evidence from around the world that a variety of legislative measures, even if introduced in isolation, have each achieved a measure of success, and that a combination of these measures would indeed enable a country to resolve its smoking problems in due course".*[109]

Political and Economic Obstacles to Anti-smoking Legislation

The manifest benefits of effective legislation to control smoking would seem to herald prompt enactment of such legislation everywhere. If strong legislation coupled with education can reduce smoking rates and six years later register a decline in lung cancer rates, as in Sweden,[110] why the resistance to legislative action? The main reason is the power of the tobacco industry that has never accepted the scientific fact that smoking is a major preventable cause of death and disease, and uses its influence and money to oppose any restrictive legislation. To counter this influence, scientists and citizens need to organize and persuade their legislators to act in the interest of the public's health.

The political obstacles are as strong as the economic interests in tobacco production, manufacturing, and sales. In the developing countries, as discussed earlier, these economic constraints are particularly strong because tobacco is a cash crop that provides rural employment for the farmer, city employment for the tobacco worker, and tax revenues and foreign exchange for the government. Moreover, in many developing countries (but not in Tanzania) the industry assists the farmer with loans and technical advice, relieving the government of the need to provide subsidies and extension services.

These are the main obstacles. The World Health Organization Expert Committee on Smoking Control Strategies in Developing Countries suggests a number of obstacles, including lack of priority for preventive health measures, reluctance to act and the influence of tobacco advertising.[111] But each of these obstacles can be overcome if the political will exists to prevent the toll of unnecessary death and disease that smoking entails.

Role of International Organizations in Smoking Control

> *"In the Third World a new Smoke Ring is being forged which is even stronger than the one in the West. It is made up of the same political and economic links—employment, revenue, trade, advertising and promotion—but it is stronger because the governments of many developing countries are even more dependent on tobacco. Few believe they have the luxury of choice. They face huge balance of payments deficits; astronomical energy costs; chronic shortages of food; lack of hard currency for imports; enormous debts; soaring food prices; runaway inflation; rising expectations on the part of their people; and the threat of political unrest which all these problems bring. To many Third World governments tobacco offers a lifebelt. It provides jobs, revenues, exports, foreign exchange, education, training, and prosperity."*[112]

What are the international organizations doing to combat the smoke ring drawn by the tobacco industry and by industrialized countries that export their tobacco to the developing world? The World Health Organization has an illustrious record, but the other specialized agencies of the United Nations are only beginning to face the issues.

In 1970 the World Health Organization made its first clear commitment to control smoking when the World Health Assembly adopted the first of a series of resolutions urging governments and international organizations to act to stop the smoking epidemic.[113] In addition to sounding the alarm, the World Health Organization undertook numerous activities to develop smoking control programs throughout the world. It convened three expert committees to advise the organization in 1974, 1978, and 1982.[114] For some time it operated the World Health Organization International Clearinghouse on Smoking and Health Information. It publishes a newsletter, "Tobacco Alert". It co-sponsored the Third, Fourth, and Fifth World Conferences on Smoking and Health. It has conducted educational

seminars and provided consultation to developing countries to implement national smoking control programs.[115] In 1981, the World Health Organization organized an inter-organizational consultation with representatives of nine other international organizations to identify possible lines of inter-organizational cooperation and to advise the World Health Organization on the feasibility of certain types of smoking control activities.[116] The World Health Organization has initiated a program for cooperating with developing countries in testing cigarettes—a very important service in view of the evidence that the tobacco companies sell excessively high-tar and nicotine cigarettes to the developing world and in view of new evidence, mentioned earlier, of some reduced risk from low-tar and low-nicotine cigarettes. The World Health Organization has also collaborated with relevant non-governmental organizations and with specialized United Nations agencies to develop concerted action on control of smoking.

Among the non-governmental organizations, the International Union against Cancer has sponsored seminars along with the World Health Organization, conducted smoking cessation programs, and published outstanding books on smoking control. The International Union against Tuberculosis, the International Society and Federation of Cardiology, the International Union for Health Education, and the International Society for Preventive Oncology have all undertaken action on smoking and health.

Many of the UN specialized agencies, as well as regional economic and health agencies, are concerned with tobacco. The Food and Agriculture Organization has collaborated with the World Health Organization in studying the economic aspects of tobacco versus the health and social costs. As a result of pressure from the World Health Organization, the Food and Agriculture Organization has reduced the number of tobacco projects it supports. In the mid-1970s it was involved with up to eight tobacco projects in a year; in 1980 it was supporting only two.[117] In February 1981, the Food and Agriculture Organization announced that before embarking on projects involving tobacco it would review the importance of the crop to the country, and where tobacco is not an established crop, draw the attention of the country to the World Health Organization resolutions on smoking and health, offer help in exploring alternative crops, and, where alternative crops are not feasible, recommend production of mild leaf tobacco and less hazardous tobacco products.[118] At the same time the Food and Agriculture Organization expressed reservations about embarking on crop diversification projects before world demand for tobacco is curbed.[119] In its 1982 report, the Food and Agriculture Organization stressed the advantages of tobacco as a remunerative cash crop, giving employment to farmers and revenues to government. It thus gave credence to the tobacco industry's contentions. As of 1985, the Food and Agriculture Organization has not supported a single crop diversification demonstration.

The World Bank has also supported tobacco growing because it meets the Bank's criterion of a profitable return on investment. Between 1974 and 1982 the World Bank and its subsidiary, the International Development Agency, made loans of more than $600 million for rural development projects that included tobacco.[120]

The United Nations Development Program promotes development through technical cooperation. The funding provided by the Program depends on the country's development priorities, but the countervailing health aspects of tobacco production are an element to be taken into consideration.[121]

In 1978 the United Nations Conference on Trade and Development published an incisive analysis and indictment of the tobacco industry by Dr. Fredrick Clairmonte.[122] It has become a classic exposing the power and the ethical irresponsibility of the transnational tobacco conglomerates, but it has not been followed up by any remedial action by the Conference.

The International Labour Organization has a direct interest in smoking at the workplace and the increased health hazard smoking presents where toxic substances are used. A study on the influence of smoking habits on occupational diseases was proposed for the Medium-Term Plan (1982-87) of the International Labour Organization.

The United Nations Educational, Scientific, and Cultural Organization, concerned with education and information programs, has an enormously important role to play in developing smoking education programs for school children, and public education in connection with the press and national broadcasting agencies.

The United Nations Children's Fund, concerned with the health of mothers and children, has a stake in preventing smoking by pregnant women, by women taking oral contraceptives, and in families with young children. The United Nations Industrial Development Organization, concerned with industrial development, has a role to play with regard to manufacturing of cigarettes and possible alternatives that would provide similar employment.

At the regional level, the European Economic Community spent $527 million in 1982 on subsidies for tobacco production and trade, and its budget for this purpose in 1983 was $672 million.[123]

Review of this wide array of international organizations, with varied expertise and financial resources, raises a troubling question: Why has so little been done to tackle the problem of substitute crops and industries and alternative sources of employment, tax revenues, and foreign exchange when the tragic and unnecessary results of the smoking epidemic can be so clearly forecast?

Dr. Kjell Bjartveit of Norway has provided the answer. Thus far the smoking epidemic has been a concern of health experts, health

organizations, and sometimes of health ministries. It must become a concern of politicians and thus of Ministries of Agriculture, Industry, Finance, Education, and National Broadcasting. For this goal to be achieved, all the specialized agencies of the United Nations concerned directly or indirectly with tobacco production and transactions involving tobacco must give priority to developing and carrying out a comprehensive, global plan for substituting other crops and industries for tobacco and cigarette manufacturing.

At the same time, other initiatives should be pursued. Research on the use of tobacco as a source of protein for livestock feed should be accelerated. The feasibility of international legal measures to control tobacco marketing should be explored, including development of an International Code on Marketing of Tobacco that would restrict advertising and regulate reduction of the harmful contents of cigarettes.[124] In the long run, is it not possible, by international agreement, to ban the production of tobacco as trade in opium has been prohibited? Tobacco—the cause of at least two million deaths annually in the world—is not so grossly visible in its destructive consequences as opium, but it affects many more individuals and families.

Approaches to Legislative Action

Consumer advocacy in all fields requires a strategy for action, an educational campaign, organization of consumers, and persuasion of parliamentarians and other policy makers. Achievement of effective legislation to control smoking involves all these components.

Each country needs to develop a strategy for action. What may be appropriate in one setting may not work in another. In some places, one must begin with a single legislative measure. In others, one can introduce comprehensive legislation dealing with various aspects of smoking control. If possible, priority should be given to prohibiting tobacco advertising and sharply raising prices and taxes on cigarettes. These measures have proved beneficial in reducing smoking rates dramatically.

Once a strategy is developed, an effective educational campaign should be mounted. The evidence is abundant that no legislation succeeds without providing information to and education of the public. Affirmative anti-smoking messages on the media are powerful. Education is the basis for consumer action.

Along with educational work goes the organization of consumers. The consumer voice is the only voice loud enough to persuade the politicians to act. And the mechanism found most effective in mobilizing consumers is a national smoking and health association. It is key in developing strategy, in conducting education, and in assisting the organization of consumers.

Finally, legislators must be informed, educated, and persuaded to enact legislation. The health and social costs of the smoking-related diseases

must be brought home to every legislator. The Scottish Smoking and Health Association has published a powerful analysis showing the deaths, days of hospitalization, and costs to the National Health Service of the smoking diseases, by each district of Parliament.[125] Thus, each member of Parliament in Scotland now knows the cost, in economic and human terms, of smoking in his Parliamentary district.

In conclusion, legislation is not an end in itself. It is a means of creating leverage for a comprehensive program of smoking control. To achieve this leverage scientists and citizens must join forces to convince legislators and other policy makers of the urgency of legislative action if the world-wide assault of the tobacco industry is to be effectively counteracted.

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Footnotes

[1] Adjunct Professor of Health Law, School of Public Health, University of California, Los Angeles; President-Elect, American Public Health Association.

[2] See following Appendix, update of Annex 1 in R. Roemer, *Legislative Action to Combat the World Smoking Epidemic* (Geneva: World Health Organization, 1982). The original table includes legislation in 57 countries enacted before 31 January 1982. The updated table also includes legislation enacted between that date and January 1, 1985. The later legislation is analyzed in R. Roemer, "Legislation to Control Smoking: Leverage for Effective Policy", 6th International Symposium on Prevention and Detection of Cancer, sponsored by the International Society for Preventive Oncology, the World Health Organization, and the Austrian Cancer Society/Austrian Cancer League, Vienna, Nov. 26-29, 1984, In: *Cancer Detection and Prevention* (In Press). Also in R. Roemer, "Recent Developments in Legislation to Combat the World Smoking Epidemic", (Publication Pending by the World Health Organization).

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[5] World Health Organization, *Smoking Control Strategies in Developing Countries, Report of a WHO Expert Committee*, Technical Report Series No. 695 (Geneva: 1983), 48.

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[16] Virginia L. Ernster, "Women, Smoking and Cancer, The Role of Cigarette Advertising and the Media", National Cancer Institute Workshop on Women, Smoking, and Cancer, Rockville, Maryland, April 18-20, 1984.

[17] R. Roemer, *op. cit.*

[18] Sir George Godber, "Progress since the 4th World Conference on Smoking and Health", *Proceedings of the Fifth World Conference on Smoking and Health* (Winnipeg, Canada: 1983), 71-75.

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[20] Iceland, "Law No. 74 of 28 May 1984 on prevention of the use of tobacco", *IDHL*, 36:1 (1985), 41.

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Appendix[1]

Tabular Summary of National Legislation

Explanatory note

A number of points need to be borne in mind when consulting the following tables.

Firstly, and most importantly, they are not meant to be exhaustive, but include only such substantial information as was available to WHO on 1 January 1985 (in a small number of cases the information is based on official although unpublished sources rather than publications). Accordingly, a blank entry does not necessarily mean that there are no provisions, but only that, for one reason or another, no information was available.

Secondly, what is to some extent an arbitrary distinction has been made between "stringent" or "moderate" smoking control measures. Clearly, what is "stringent" or "moderate" is a matter of opinion, and a "stringent" series of measures in a given country today may well seem "moderate" in a few years time when other countries have followed suit. However, it seems useful to distinguish between, for instance, traditional measures which do not appear to be primarily dictated by health concerns and more recent measures which are clearly part of a health-related anti-smoking policy, or again between measures which affect relatively wide areas of individuals' lives and ones which do not. The symbols used and the criteria on the basis of which they have been assigned are set out below.

Despite the above reservations, it is hoped that the tables will assist readers in identifying general patterns among countries and regions.

Key to Symbols Used in Tables 1-6

- ● = total (or effectively total) ban
- ◐ = "stringent" control measures
- ◑ = "moderate" control measure
- ○ = other control measures (stringent/moderate distinction not applicable).
- W = health warnings required
- N = Indication of nicotine level required
- T = Indication of tar level required
- C = indication of carbon monoxide level required
- () = provisions laid down by voluntary agreement, not by legislation

Examples:

- ◐W = stringent controls; health warning required
- W(◐) = warning required by law; also stringent controls under terms of voluntary agreement

Criteria for Assignment of Symbols

Advertising:

- ● = a total (or effectively total) ban on advertising of tobacco products (in some cases included in a ban on advertising of all commodities)
- ◐ = extensive restrictions in several media
- ◑ = minor restrictions, or major restrictions in one medium only

Smoking In Public Places:

- ◐ = a wide range of restrictions clearly dictated by health considerations
- ◑ = a limited range of 'traditional' restrictions, or an undefined ban in "public places"

Smoking In Workplaces:

- ◐ = a range of specific measures to protect workers' health
- ◑ = measures which affect workers' health only incidentally, or which concern only a limited category of workers

Mandatory Health Education:

- ◐ = a broad health education policy (especially if funds are expressly allocated)
- ◑ = health education directed at one or more target groups (i.e. pregnant women)

[1] Source: R. Roemer, *Recent Developments in Legislation to Combat the World Smoking Epidemic* (World Health Organization, Geneva: In Preparation).

Table 1 African Region

Country	Advertising	Package information	Levels of harmful substances	Sales to adults	Smoking in public places	Smoking in workplaces	Smoking by minors	Mandatory health education
Algeria	●	W			◐			◑
Cote d'Ivoire					◑			
Kenya		W			◑			
Mozambique	●				◑			◐
Senegal	◐	WNT			◐			

Table 2 Region of the Americas

Country	Advertising	Package information	Levels of harmful substances	Sales to adults	Smoking in public places	Smoking in workplaces	Smoking by minors	Mandatory health education
Bolivia	◐	W			◐		○	◐
Brazil		W		■	◪			
Canada	(◐WNT)	(WNT)	(○)		□		○	
Chile	W	W						
Colombia	◑	W						◑
Costa Rica		W						
Ecuador	◑WNT	W						
Guatemala		W						
Mexico	◑	W						◑

■ Rio Grande do Sul bans marketing of cigarettes in any establishment subsidized by the State, including the buildings of the Legislative Assembly
◪ Rio Grande do Sul forbids smoking in public places and intercity transport
□ City of Winnipeg

Table 2 Region of the Americas (continued)

Country	Advertising	Package information	Levels of harmful substances	Sales to adults	Smoking in public places	Smoking in workplaces	Smoking by minors	Mandatory health education
Panama	◑W	W						
Paraguay	◑							
Peru	◑W	W						
United States	◑(W)	●W			◑■	◑□		◐
Uruguay	◑WNT	W			◑		○	◑
Venezuela	◑W	W			◑			

■ For reasons of space, account has not been taken here of the provisions in force in a number of individual states (such as Minnesota and Utah and many others) which are among the most stringent in the world.

□ In the State of California, 64 communities (including 11 of California's 58 counties) restrict smoking in the workplace. The State of Connecticut requires employers to establish and post rules governing smoking and nonsmoking.

Table 3 Eastern Mediterranean Region

Country	Advertising	Package information	Levels of harmful substances	Sales to adults	Smoking in public places	Smoking in workplaces	Smoking by minors	Mandatory health education
Cyprus	◐W	W		○	◑		○	
Egypt	◐W	WNT	○		◑			
Jordan	●	W■			◐			
Kuwait	◪	WT	○					
Lebanon	W	W						
Saudi Arabia					◑			
Sudan	●	W			●			

■ Jordan requires package information specified by the Minister of Health.

◪ Advertising of tobacco is prohibited in the Municipality of Kuwait, which accounts for a relatively large proportion of the population of the country.

Table 4 European Region

Country	Advertising	Package information	Levels of harmful substances	Sales to adults	Smoking in public places	Smoking in workplaces	Smoking by minors	Mandatory health education
Austria	◑	NT			◑			◑
Belgium	◐W	WNTC		○	◐	◑	○	◑
Bulgaria	●	W		○	◐	◐	○	◐
Czechoslovakia	●	W			◑			◐
Denmark	(◐)	(NT)			◑			◑
Finland	●	●WNTC	○	○	◐		○	◐
France	◐	WNT			◐	◑	○	◐
German Dem. Rep.	●				◑		○	
German Fed. Rep.	◐(WNT)	WNT				◑	○	
Greece					◑			◑
Hungary	●	W			◐			◐
Iceland	●	●W			●	◐	○	●
Ireland	◐W	●W						
Israel					◐			
Italy	●				◐		○	

Table 4 European Region (continued)

Country	Advertising	Package information	Levels of harmful substances	Sales to adults	Smoking in public places	Smoking in workplaces	Smoking by minors	Mandatory health education
Malta	◑							
Netherlands	◑	WNT						
Norway	●	●WNT				◑	○	
Poland	●				◐	◐		
Portugal	●	WNT			◐		○	
Romania	●				◐			
Spain	●◪□	W□	○	◐□	◐□		○□	□
Sweden	◐WNTC	●WNTC			○■	○■		●
Switzerland	◑	WNT						
Turkey					◑			
USSR	●	W			◐	◑	○	◐
United Kingdom	(◐WT)	●(WT)	(○)				○	
Yugoslavia	●							

■ Recommendations by the Swedish National Board of Health and Welfare and the National Board of Occupational Safety and Health set forth suggested rules on smoking in public places and workplaces.

◪ Informational advertising of new products with low tar or nicotine contents is permitted in Spain for two years following their introduction.

□ Spain (Catalonia) restricts advertising of tobacco, smoking in public places, places of sale of tobacco, prohibits sales to persons under 16 years of age, requires analysis and publication of nicotine, tar, and carbon monoxide contents, and mandates health education.

Table 5 South-East Asia Region

Country	Advertising	Package information	Levels of harmful substances	Sales to adults	Smoking in public places	Smoking in workplaces	Smoking by minors	Mandatory health education
Hong Kong	○W	WT	○		◐		○	●
India	W	W						
Macao	W	WNT			◐			◐
Pakistan		W						
Sri Lanka	◐	W			◐			
Thailand	◐	W			◐			

Table 6 Western Pacific Region

Country	Advertising	Package information	Levels of harmful substances	Sales to adults	Smoking in public places	Smoking in workplaces	Smoking by minors	Mandatory health education
Australia	W(◐) ■	W ◐					○ ■	
Fr. Polynesia	●	WNT						◐
Japan		W			◐		○	
Malaysia	◐	W			◐			
New Zealand	(◐WT)	(W)			◐		○	
Singapore	●	W			◐			
Vietnam								◐

■ The State of Western Australia has banned all cigarette advertising and promotion. The State of South Australia has enacted a statute, Tobacco Sales to Children (Prohibition) Act, 1984, making it an offence to sell cigarettes to persons under 16 years of age

Reasons for the Disagreements on the Impact of Smoking on Medical Care Expenditures: A Proposal for a Uniform Approach

M.E. Thompson and W.F. Forbes[1]

Editor's Comment

The full text of this paper may be found in *Social Science and Medicine*, 21:7 (1985), 771-773. The following summary provides a sense of that paper.

Summary

It has recently been suggested that smoking does not increase medical care expenditures. Therefore, reduced smoking is unlikely to result in decreased costs. This conclusion differs from that of most other studies in this area and the reasons for this disagreement are investigated in this paper. It is noted that medical care expenditure estimates do indeed yield different results depending upon whether they are estimated on a per-capita basis or in total for populations which change in size as smoking is reduced or eliminated. To avoid disagreement in future studies of this type, specific proposals are made which should facilitate the comparison of results obtained from different studies.

[1] WHO Collaborating Center for Reference on the Assessment of Smoking Habits, Faculty of Mathematics, University of Waterloo, Waterloo, Ontario, Canada, N2L 3G1.

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Appendix B

Related Documents

1. Alberta Alcohol and Drug Abuse Commission, *Strategies for a Smoke-Free World, A Report of the International Workshop on Smoking and Health* (Edmonton: 1986).
2. Alberta Alcohol and Drug Abuse Commission, *Strategies for a Smoke-Free World, Recommendations of the International Workshop on Smoking and Health to the International Council on Alcohol and Addictions* (Edmonton: 1986).

Both of these documents are available at a nominal charge from:

The International Council on Alcohol and Addictions
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